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NEWS DIGEST

DOMESTIC

Senate sidetracked the airmail subsidy separation bill recently passed by the House and it appears unlikely that action will be taken on the measure during the remainder of this session. In that case, the bill will have to be processed all over again next year through both Houses.

Adm Emory S Land, president of Air Transport Assn., is resigning from ATA effective the end of this month. He says that he has exceeded the maximum (five years) term he had intended to serve. New ATA board of directors was elected: R M Love, All American Airways, G R Smith, American Airlines, T E Braniff, Braniff Airways, J H Carmichael, Capital Airlines, E V Rickenbacker, Eastern Air Lines, George E. Gardner, Northeast Airlines, J T Trippe, Pan American World Airways, W L Pierson, Trans World Airlines, and W A Patterson, United Air Lines.

Airspeed Ambassador production prototype was damaged during a landing test at a forward center of gravity loading with throttles closed and flaps fully down. Both engines broke away and the airplane left the ground again to land some 450 yd. from initial ground contact. No secondary damage was ascertained and the plane is expected to be flying again before the end of next month.

Texas Bullet 205 four place all-metal personal plane made in Tyler, Tex., has gotten CAA approval. Company is planning to get enough materials for initial output of 25 planes and build a plant employing about 200. The prototype Bullet was slated to visit Wright Field for USAF evaluation.

Lt Gen Nathan F. Twining has been nominated for four star promotion to USAF Vice Chief of Staff by President Truman. Other nominations included Lt Gen Lauris Norstad as Commander in Chief, USAF in Europe, and Lt Gen. Idwal H. Edwards as USAF Deputy Chief of Staff in charge of operations.

Twin Bonanza Price is $44,950, flyaway, Beech Aircraft, Wichita. The figure covers all equipment but radio installations. But price of the Twin Beech 18 has been boosted $5500 to $77,050, due to rise in costs. The new four-place Bonanza remains at $12,990. The company's civil plane production is still very active.

Douglas XA2D-1 Skysbark crashed at Mmoc AFB, killing pilot Lt Comdr Hugh L. Wood of Naval Air Test Center, Patuxent. Cause was not determined. The airplane had been flying at a considerable altitude prior to the mishap. XA2D-1 had made 20 flights previously. Douglas engineer Hememann told AVIATION WEEK that the Navy was satisfied with the craft and that bugs in the Allison XT-40 turboprop engine had been worked out. Douglas has limited production orders for the big Navy attack plane.

Orders for Ten Super Connies have been placed by Trans World Airlines at a cost of $16 million, with delivery set for spring of 1952. The planes will seat 75 and be powered by 2900 hp Wright R 3350s with jet exhaust stacks.

FINANCIAL

Lockheed Aircraft's sales for 1950 will net about $170 million, says President Robert E. Gross in a report to stockholders. This will be the highest sales volume in the company's history, excepting the World War II period, and will be about 44 percent higher than last year's $117,667,000. The company head reports unfilled orders and letters of intent totaling over $425 million. Total dividends this year came to $3 per share ($3,293,000).

Braniff International Airways sees 1950 as most successful year in the firm's 22-yr. history from a net profit standpoint, with profit of at least $1.1 million foreseen, including a profit of over $2 million on the domestic division and a loss of $347,000 on international division, and the system paying income taxes of $646,000.

Electric Boat Co. has declared a 25 cent dividend payable Dec. 8, for holders on record Nov. 17 of common shares. Company's consolidated backlog as of Nov. 1 is estimated at $94 million.

INTERNATIONAL

Trans-Australia Airlines, the publicly owned domestic air service, reported its first profit, for the year ended June 30. The amount, $481,152, came after a succession of losses and after payment of interest on a government loan of over $9.75 million. TAA credits its five Convair-Liners for improvement.

Qantas Empire Airways, Ltd., showed a net profit of $523,716 for the year ended Dec. 31, 1949, in its second year of government-controlled operation, it has been belatedly disclosed.

AVIATION CALENDAR

Jan 2-7, 1951—Miami Aviation Week, Miami, Fla

Jan 5-6—Third annual Kansas aerial spray conference, engineering lecture hall, Kansas State College, Manhattan, Kan

Jan 6-7—Florida Air Pilots Assn air show and exposition of planes and equipment, Opa Locka airport, Miami, Fla

Jan 6-7, 13-14, 20-21—First soaring contest of the Northern California Soaring Assn, Warm Springs Airport. Write Emil Kissel, contest committee, Warm Springs Airport, Warm Springs, Calif

Jan 8-10—Eighth annual air cruise Miami Havana, and return, of Florida Air Pilots Assn

Jan 8-12—1951 annual meeting of the Society of Automotive Engineers, Hotel Book Cadillac Detroit.

Jan 9-26—Third annual Institute of Industrial Transportation and Traffic, Washington, D C

Jan 15-18—Plant maintenance show and concurrent conference on plant maintenance techniques Cleveland, Ohio.

Jan 21—Air education day, sponsored by the Palm Springs Junior Chamber of Commerce Palm Springs Airport, Calif

Jan 22 26—Winter general meeting, American Institute of Electrical Engineers, Hotel Statler, New York.

Jan 29 Feb 1—19th annual meeting of the Institute of Aeronautical Sciences, Hotel Astor N Y

Feb 1-2—Annual spring management conference sponsored by the Society for Advancement of Management and North western University Centennial Committee, Chicago Campus Northwestern University Chicago

Feb 19 20—Meeting covering agricultural research as related to aviation sponsored by the Flying Farmers of America. Memphis

Mar 12-13—Short course on uses of aerial equipment in agriculture, Purdue University West Lafayette, Ind

Mar 16—Sixth annual flight propulsion meeting Institute of Aeronautical Sciences Hotel Carter Cleveland

Mar 19-23—Seventh Western Metal Exposition Oakland Auditorium and Exposition Hall Oakland, Calif

Apr. 24-26—ATA annual engineering and maintenance conference Hotel Drake Chicago

May 17 19—Annual convention of the Women's Aeronautical Assn of the U S Little Rock Ark

June 11 15—Second annual conference on industrial research, conducted by Columbia University Dept of Industrial Engineering New York

June 15 July 1—International aviation display Grand Palais and Le Bomget Airport, Paris

Sept 7-11—Third annual Anglo-American Aeronautical Conference convened jointly by Royal Aeronautical Society and IAS, Brighton, England

PICTURE CREDITS

16—(top) Wide World (center) Lear, Inc. 27—Lockheed Aircraft Corp., 30—Consolidated Vultee Aircraft Corp 39—United Air Lines.

TEXAS A&M TRIES ITS WINGS—Simplified design of new agricultural plane built by Texas A&M's Personal Aircraft Research Center is highlighted in this first flight view of the winged sprayer, duster, fertilizer and seeder being piloted by C W Von Rosenberg.

Aviation News Picture Highlights

WASP MAJOR OUTPUT SPEEDED—Recent view (right) of Pratt & Whitney Aircraft's R-4360 engine line at E Hartford, Conn., which has been on a three-shift six-day 48-hr week since September to meet increased military demands for the powerful pistoo engine The 3500-hp. powerplant is installed in the big Convair B-36 and a number of other USAF and Navy planes.

BRITAIN PITCHES IN—Production of Supermarine Attacker jet fighters (below) for the Royal Navy is well under way as evidenced in this photo At left are fuselages in their assembly fixtures, in the foreground are nearly complete planes. Note midfuselage mounting of Rolls Royce Nene engine

WHO'S WHERE

In the Front Office

CARRYING ON THE NAME—Olive Ann Beech, widow of the late Walter H Beech, has been elected president and chief executive officer of the Wichita plane company Mrs Beech has been active in the industry since 1925 and was a co-founder of the concern The appointment marks the first time a woman has achieved such a position with a major U S aircraft manufacturing firm Her election fills the vacancy created by her husband's death Nov. 29

J G. Notman has been appointed general manager of Canadair, Ltd , in addition to his present position of vice president The move was made to fill the temporary opening left when H Oliver West, the firm's president, was granted an extended leave of absence

What They're Doing

Abe Silverstein, chief of research at NACA's Lewis Flight Propulsion Laboratory, married Miss Marion L. Croiser, a secretary in the propulsion research division

Dr R. P Harrington, head of aero engineering at Rensselaer Polytechnic Institute, has been named chief editor of the Aeronautical Engineering Handbook, published by McGraw Hill Book Co He succeeds the late Dr Alex Klemin, who died last month

Changes

G S Trimble, Jr , former head of Glenn L Martin Co 's aerodynamics department, has been made head of a newly established design development section in the engineering department Leete P Doty has been appointed superintendent of the recently reactivated P&WA Southington, Conn , plant, and Herbert A Johnson has been named plant engineer Harold L. Greenhut has been named project engineer of Rotor-Craft Corp J L. Hammond has been appointed director of field service for Sperry Gyroscope Co at Great Neck, L. I G M Rouzee, former representative to BuAer, succeeds him as manager of Navy contracts

INDUSTRY OBSERVER

► Northrop Aircraft, Inc., in production with F-89 Scorpion, is still experiencing considerable difficulty with longitudinal control characteristics Fourth modification of horizontal stabilizer has been made in effort to overcome problem

► Gen Harold L George, vice-president of Hughes Aircraft Co , is surveying the plant facility field looking for location of missiles production site Among those looked over so far are the Higgins plant, New Orleans, and the old Bell plant at Marietta, Ga

► Douglas Aircraft, stepping up production of its C-124A heavy transport, is still meeting programmed production estimates Planes are currently coming off production line at rate of four per month

► Concurrence in high level policy decision between USAF and Navy for Navy procurement of long range Douglas DC-6s and Lockheed C-121s is beginning to pay off Decision was based on joint Chiefs of Staff study showing probable need of heavy transport production by spring 1951. Decision was made before new money appropriation was available Thus, production potential was raised without reallocating USAF funds

► To meet stepped-up production schedule of British Electric Co 's twin-jet Canberra ground support bomber, the Air Ministry has ordered production of the 6000-lb Avon axial flow engine at four plants Rolls-Royce at Derby and Glasgow, Bristol Co., and Napier and Son Ltd

► High hopes of Napier and Son Ltd , to meet design performance estimates of its small turboprop Naiad are still unrealized Engine was to deliver 1500 shaft horsepower and 240-lb thrust Engine weighs 1095 lb

► Large numbers of the MIC-15, Soviet jet fighter reported in Korean skies are being observed over Berlin MIG-equipped fighter groups are also stationed at Wernenchen, Grossenhaim, Zerbst and Oranienburg airfields outside of Berlin Other Russian types seen over the German capital include the IL-10 ground-support plane, the LA-9 or -11 fighter and the TU-2 attack bomber

► Air Force, still undecided about trainers despite completion of its trainer evaluation, is due for another surprise in its alternative plan of modernizing 950 obsolescent North American T 6 trainers Pratt & Whitney has filed a letter with Navy stating that present production precludes further production of Wasp Jr engines The engine is used as T-6 powerplant USAF has some Wasp Jr's in storage but not enough to round out its contemplated T 6 conversion program Jacobs Aircraft Engine Co which took over Wasp Jr production during World War II might take it over again, but tooling up and getting into production does not coincide with Air Training Command's pilot training schedule

► The Allison Turbolner is under taxi tests at San Diego, Calif , and may make its first flight before year's end Plane is powered with two Allison T-38 engines and is a cargo version of the Convair Liner which Allison expects to fly around the country in turboprop demonstration for airlines following early flight tests at San Diego

► Convair XF-92A is going to be turned over to NACA pilots for additional test work at Edwards AFB, Muroc, Calif Plane has been at San Diego for repairs following belly landing at Edwards, and for engine change and additional instrumentation

► Capital Airlines expects to make present equipment do for 1951 despite finalizing plans for purchase of 10 more Lockheed Constellations and replacing some Douglas DC-3 equipment with Super DC-3 craft Working capital, accumulating for the first time in Capital history, is being stored away to provide a base for new buying in 1952

Washington Roundup

Secretary of State for Air?

This shuffle is being mulled over at the White House CAB member Russell Adams, whose term expires Dec 31, would take a new post, Assistant Secretary of State for Air, former Director of Aeronautics for Washington State Joseph P Adams (no relative), would step into the CAB spot

After a conference West Virginia Sen Harley Kilgore reported 'The President likes Russell Adams and is impressed with his ability We expect him to be nominated either Assistant Secretary of State or to a new term at CAB The President seemed to favor the State appointment But the West Virginia delegation took the position that, because of his background in airline economics, (Russell) Adams should stay on at CAB"

Sen Warren Magnuson, close friend of the President, is pushing Joseph Adams for the CAB appointment Tip off that the White House is seriously considering him he is now being investigated by the FBI This is a legal prerequisite to appointment to a key federal post

Fireworks may develop if Russell Adams is left in the cold

Kilgore commented "The Pan American people are out to kill him off I don't think they will succeed But their accomplishments have surprised me in the past I think they might as well know now, though, that if they do, there will be repercussions, plenty of repercussions in the Senate—and I'll start them up." He said PAA's opposition was based on Adams' vote against acquisition of American Overseas Airlines by PAA

Will It Fly?

That hot political and strategic issue of 1947—award of an $18 million contract to industrialist Henry Kaiser to build a 200 ton plywood flying boat during the last war—may be in the limelight again Planemaker Howard Hughes plans to put the giant craft to a flight test in a few months He'll stage a public demonstration when he does It's designed to accommodate 700 troops, compared with the 125 for the C 124, largest troop ship MATS now flies

Hughes entered into partnership with Kaiser after award of the contract, later took over development of the plane on his own After the war, Sen Owen Brewster sponsored a Senate investigation into charges of politics in award of the contract Hughes countered that Brewster "operated" for PAA, had used the investigation in an attempt to club him into merging TWA, of which he is the main owner, with PAA

Sen Mat Neely, backing reappointment of Russell Adams to the CAB, is chairman of the Senate subcommittee now looking into allegations that Brewster financed wire-tapping of hotel rooms occupied by TWA officials during the investigation.

100-Group USAF

Joint Chiefs of Staff have moved the "target date" for an armed strength capable of meeting the challenge of all-out war from 1952 to 1954 The outlook in the shifting Washington picture is that the top military command will set a 100 group USAF as the minimum goal for achievement by that date Present strength is 60 groups The 84-group program adopted after Chinese Communists eclipsed signs of victory for United Nations forces in Korea is already passe House Armed Services Committee's chairman Carl Vinson contemplates a "90-to-100-group" USAF

A member of JCS remarked "I certainly hope we will not stop at the 90"

New Defense Secretary?

National Security Resources Board Chairman Stuart Symington's name has sprouted up in speculation on a new Secretary of Defense Since the President established the Office of Defense Mobilization, headed by Charles E Wilson, NSRB has been looked on as superfluous

But many observers still mark Undersecretary of Defense Robert Lovett as the prospect to take over the Defense Department reins He largely carried the ball for the Department at congressional hearings on the $16-billion defense supplemental Secretary of Defense George Marshall, in poor health, would like to return to retirement If Secretary of State Dean Acheson moves out, Lovett would be a logical choice for that appointment He has served as Assistant Secretary of State as well as Assistant Secretary of War for Air

Military Spending Lag

Sen Harry F Byrd is demanding the "why and wherefores" of lagging military spending Since July 1, USAF expended $2.2 billion, only a fraction of the $9 2 billion cash appropriated for the service for the 1951 fiscal year This will be increased to $13 8 billion by the pending second supplemental bill

Byrd commented 'It means the services are not pushing production and getting deliveries of equipment to build up the armed strength"

Vandenberg-Collins Team

USAF's Chief of Staff Hoyt Vandenberg and Army's Chief of Staff J Lawton Collins see eye-to-eye on military strategy They outdid each other at Congressional hearings in each emphasizing the importance of the other's service

Collins reported First and most important in the defense buildup is "the material increase in the strength of the Air Force—and then a reasonable increase in Army strength"

Vandenberg stated Strategic bombing is likely to be largely wasted effort unless accompanied by ground action An enemy's productive capacity might be scuttled But this would be of little value if its troops have sufficient materiel behind the lines to hold them for a march into another country to take over its productive capacity They must be blocked by ground forces

More Navy Planes

No 3 defense supplemental, being prepared at the Pentagon, is expected to carry substantial funds for Naval aircraft procurement Even before the turn against UN forces in Korea, Navy estimated a 455 plane deficiency below its minimum requirements The coming bill may go as high as $15 billion, boosting the Department of defense budget for 1951 fiscal year to $56 8 billion

AVIATION WEEK VOL 53, No 26 DECEMBER 25, 1950

Government Confusion Slows Mobilization

Industry hopes new defense agency will unravel priorities.

By Aviation Week's Washington Staff

As far as the aviation industry could see, Washington, last week was once again the "City of utter confusion" which it had been chastened in early World War II days Confusion in the federal government over industry mobilization was even more complete, if any thing, than it was as of Pearl Harbor day and early in 1942

Prospects were that the confusion would grow worse, before it would grow better, but there were at least hopeful signs pointing toward restoration of some order in the chaos

• Appointment by the President of General Electric's Charles E Wilson to head the new Office of Defense Mobilization was well received by industry The Wilson War Production Board record in World War II indicated that he would take the strong steps needed to straighten out the hopeless aircraft priorities tangle left by National Production Authority, which presumably soon moves under his new organization

• Defense Secretary George C Marshall last week set up a 10-point program calling for Air Force Navy, and Army to broaden the scope of military procurement to get production rolling faster and to take up slack in civilian industries now facing materials shortages

▶ **The First Step**—The Marshall order was first step toward implementing the broad Defense Program for an all-out buildup of industrial capacity for aircraft and equipment production

Joint Chiefs of Staff have moved up the target date for achieving a broad, expanded industrial base for military air power production from 1954 to 1952

Two stimulants will be used to force the expansion of military production

• **The Second Supplemental** 1951 defense appropriation due for passage soon in Congress will boost USAF funds for aircraft and related procurement $2 1 billion more, from the $4 5 billion now available to a $6 6 billion total Added to this will be Navy's overall $2 5 billion in 1951 for aircraft and related equipment

Aircraft Funds Grow

Second 1951 supplemental appropriation due for passage soon in Congress will boost funds for USAF by $4,603 million to a total $13,946 million for 1951 fiscal year and will increase funds for Naval aviation by $314 million to a total $3,409 million The increases include

	Now available $ Millions	Increase $ Millions	Complete program $ Millions
Air Force			
1. Aircraft and related procurement	$4501	$2114	$6615
a Complete aircraft	$2414	$ 602	$3017
b Guided missiles	$ 57	$ 92	$ 149
c Electronics and communications equipment	$ 197	$ 190	$ 387
d. Industrial mobilization	$ 27	$ 52	$ 79
2 Research and development	$ 240	$ 115	$ 355
Naval Aviation			
1 Aircraft and related procurement	$2386	$ 156	$2542
a Piloted aircraft procurement	$2278	$ 82	$2361
		(for facilities expansion)	
b Guided missile and target drone procurement	$ 13	$ 15	$ 28
2 Aircraft and facilities	$ 707	$ 158	$ 866
a. Research and development	$ 93	$ 37	$ 130
b Industrial mobilization	$ 12	$ 17	$ 29

• **Both Navy and Air Force** will have funds earmarked in the second supplemental specifically for expanding aviation plant capacity. Earmarked is $410 million for tooling up from USAF funds, and $82 million from Navy Bureau of Aeronautics funds

Commented Secretary Marshall "The important thing at this time is to lay down the assembly lines, the tooling, the jigs, and so forth, so that we can quickly build up what may be necessary rather than to get such quantities as are possible now without developing the facilities The facilities in some respects are almost more important than the original materiel"

He added "But even if the possibility of major war within the next few months were serious this emphasis on production is the way to begin The important thing is to get a base of departure, a strong base of departure, well planned, well conceived You can go ahead very rapidly from that position"

▶ **USAF Funds Tripled**—The pending supplemental will almost triple USAF's funds for industrial mobilization, increasing the $27 million now available by $52 million to a total $79 million It earmarks $17 million additional for BuAer industrial mobilization, increasing the $12 million now available to $29 million With these funds standby plants will be put in condition, reserve machine tools purchased licensor-licensee and subcontracting structures worked out.

Military air power in being will be rapidly increased to a point capable of sustaining operations in an all-out war for approximately a year

But there will be restraint in building up the Services An attempt to build up to a four-to-five million man Army, for example would be at cross purposes with the primary objective of increasing the industrial base for military support Men who might contribute much to the capacity expansion program would be in uniform, with little to do

Production Realities

Army's Chief of Staff, J Lawton Collins said

"It requires much more time to make the weapons of a fighting man than it does to train him and if we should ill advisedly call men out before industry can convert from a peacetime to a wartime economy we would hamper the very conversion we are trying to attain, and consequently slow up the production of military equipment I can assure , that there are few factors more detrimental to troop

morale than to be in uniform with insufficient equipment"

Some idea of the gap between Washington's official thinking as relates to aircraft production, and the cold realities, is shown in President Truman's national emergency statement calling for a five-fold increase in plane production within a year. Analysts of aircraft production in World War II, have generally concurred that the best expansion of aircraft production that can be expected in a year's time is triple the production of the beginning of that year.

►"Not in the Deck"—Last week, United Aircraft Corp. president H. Mansfield Horner pointed out that President Truman's expansion program "simply is not in the deck" as far as aircraft engines are concerned. Horner said that a three-fold expansion in one year or a seven-fold expansion in two years was the most that could be expected under favorable circumstances.

While much of the aviation industry more or less tacitly agreed with the out-spoken Horner pronouncement, there was a general industry sentiment to "get on with the show," with full appreciation for problems involved.

With shortages already painfully handicapping aviation production at its present level, and with only a part of the fiscal 1951 year contracts let, the question of a workable priorities system was a big headache.

Question of what additional plants would be opened up and what would be built in spots like the Curtiss-Wright Columbus plant recently taken over by North American was taking shape.

►**Broadening the Base**—The Marshall order called for a broadening of industry mobilization base, by using additional contractors wherever possible instead of multi-shift or overtime operation at existing military contractors' plants. Problem of the additional expense of such a program is considered a necessary premium for the additional defense production which would be promptly available at the additional number of plants, if all could be stepped up in emergency to two- and three-shift all-out operations.

But the manpower problem, already in tight supply in aircraft plants at present employment levels, was still another critical factor in the success of this broadened industrial base program.

Priorities Trouble

Greatest problem, though, is the shortage of raw materials, components, production machinery, tools, and factory maintenance materials. And the shortage of these things many Washington observers feel soon will mean the end of the National Production Authority.

Neither the military nor Mobilization Chief Wilson will buy the existing NPA setup, with aircraft production expediting and priorities administration under a railroad headed "transportation equip."

The DO (Defense Order) system and NPA have plunged aircraft production deeper into competition with television, apartment construction, and millions of household and industrial products to satisfy demands created by drum-tight U. S. economy, inflation buying and gray market hoarding.

Basic defects of the DO-order system and administration of the NPA are blamed for this. Behind this is the government's miscalculation of production needs and mobilization economics.

Government officials figured that vital war materials would flow to military contractors smoothly and fully, while producers and warehouses still stayed on a 75-percent civilian product basis.

Instead, here is what has happened:

• **DO ratings are not extendable** to materials and parts for maintenance, repairs and operations of plant machinery (so-called MRO supplies). Aircraft and components makers are all hit by shortages of tools, bits, dies, lube oils, welding electronic tubes, and many other production essentials. They must bid against civil buyers of the same scarce products, with no priority. Meanwhile, graymarketeers and super-demand have helped to make everything hard to get.

• **DO ratings are not extendable** to new purchases of new machinery, tools, and laboratory and test equipment to produce the defense priority products. To get priority for such tools, the contractor must apply to the procuring agency, say the Air Force. But the Air Force is arbitrarily limited by the DO-98 regulation to a small amount of such DOs for tools and machinery.

• **Construction materials** are tight, and lack DO priority rating, in a similar way to production machinery.

• **Warehouse stocks** of small quantity materials used by aircraft and components makers are drastically low. The 25-percent limit on most DO priorities for the military mean almost nothing when the shelf is already bare. And a majority of aluminum, alloy steel, and copper items are procured from warehouses.

• **Mill shortages** of many raw materials like ingot aluminum, aluminum forgings, copper and zinc also mean slow delivery. Consumer commodity orders from old customers naturally have strong appeal to some primary producers. If a producer makes 1 million lb. of aluminum and 250,000 lb. are required to meet DO priority orders, the other 750,000 lb. may go to make storm windows and easements that building contractors ordered last winter.

• **DO percentage limit** on plant output means the first two buyers from a 250,000-lb. aluminum plant might get DOs covering 100,000 lb. each. But that leaves only 50,000 lb. for the next three prospective DO buyers. Same applies to radio tubes, etc. The TV sets keep rolling and radar production hits snags, because of tube shortage.

How It Was Done

NPA asserts that shortages of MRO supplies, right now the worst aircraft production bottleneck, will be cured. But aviation industry men in Washington say the only way to keep production from grinding to a stop is to go back to the World War II MRO allocations system.

At that time, the defense contractor got priority on MRO supplies up to a given percentage of the dollar value of his contracts. Cutting tools, reamers, broaches, tubes for welding machinery, drills, Kirksite dies (zinc alloy), etc., for defense production machinery thus would have priority.

In World War II, aircraft production scheduling proved too complex to fall in the normal channel of War Production Board operations.

So the Air Force demanded, and got, a separate "little WPB," the Aircraft Production Board, with its operating group the Aircraft Resources Control Office. Today's aircraft production scheduling is just three times as complex as it was in 1942, when WPB aircraft division chief, Harold Talbott and a dozen of his aides resigned, and the Air Force and Navy got representation on the semi-autonomous Aircraft Production Board.

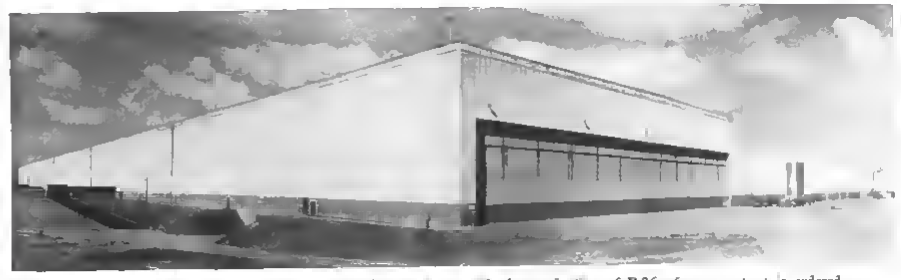
NPA's original thinking on granting no MRO priorities was that this is only a partial mobilization, and Commerce Department statistical charts showed there would be plenty of supplies to go around. The chartists did not foresee the inventory drain already well underway in last spring's industrial and aircraft orders boom.

Radar to Forecast Jet Weather

Melbourne—The Department of Civil Aviation is setting up a network of 15 radar stations to provide meteorological services for high-flying jet aircraft. The sites will be in Australia and New Guinea.

The radars will be used to track the course of meteorological balloons enclosed in a mesh of Nylon. The Nylon is treated with silver to make it reflect the radar pulses.

The radar will also be used for detection of heavy cumulus clouds which show up on the screen with a characteristic echo. Thunderclouds approaching an airport will be plotted for the benefit of planes flying in the vicinity.



MARIETTA PLANT, where Bell built B-29s during the war, is set aside for production of B-36s if more output is ordered.

USAF Reveals Plans for Reopening Plants

Douglas to build B-47s at Tulsa, GM jet fighters at Kansas City, Kaiser C-119s.

By Ben Lee

Assignment of major U. S. aircraft and engine manufacturers to additional plants held in Air Force and Navy reserve status, are nearing completion, Air Force Undersecretary John A. McCone has disclosed to AVIATION WEEK.

As a result of the partial industrial mobilization now put into effect under the declared national emergency, all of the major airframe manufacturers have been notified of their mobilization assignments. Most of them have completed personnel, facility and tooling problems of the specific plants which they are to occupy.

►**Plant Assignments**—Some of the most important airplane company new plant assignments disclosed by Undersecretary McCone include:

• **Boeing-Douglas.** For production of the Boeing B-47 Stratojet bomber, two of the four major facilities, which would be used in event of an all-out mobilization, are now assigned under the partial emergency. The first of these is the Boeing Wichita plant now in operation with planes coming off production lines at a stepped-up rate well within planned production estimates.

Douglas Aircraft will build the B-47 under license to Boeing in the second plant which has just been assigned the plant occupied by Douglas in World War II at Tulsa, Okla. Its production is aimed at meeting the additional production requirements for additional B-47 groups in the planned 84-group Air Force. Boeing has already been notified of further plant expansion contemplated in event of an all-out production program for the B-47.

• **Fairchild-Kaiser.** Negotiations are being completed for Kaiser-Frazer, present occupant of the Willow Run bomber plant operated by Ford in World War II, to manufacture Fairchild C-119 Packet cargo planes instead of the automobile production currently underway at Willow Run. The switchover will enable the Air Force to use Kaiser's approximately 8000 production employees, its tooling and engineering staff. McCone indicated that the Air Force was backing the completion of this program. The assistance agreement between Fairchild and Kaiser was to be signed late last week.

• **Convair-Marietta.** The huge bomber plant at Marietta, Ga., occupied by Bell in World War II, will continue as a storage place of machine tool reserves during the partial emergency status. But it is in readiness as an additional production facility for the huge Convair B-36 intercontinental bombers, in event all-out emergency production is ordered.

• **General Motors-Kansas City.** It is understood that General Motors Corp. will occupy the bomber plant at Kansas City, operated by North American Aviation in World War II, for construction of an unnamed jet fighter.

• **North American-Columbus.** North American Aviation, which has occupied the former Curtiss-Wright plant at Columbus, O., is expected to open up additional lines of jet fighter production, presumably for an advanced version of its F-86 sweptwing jet.

• **Studebaker.** Negotiations are now in progress for the Studebaker Corp. to begin the manufacture of jet engines.

• **Ford-Pratt & Whitney.** Ford Motor Co. is now putting a plant in production at Chicago for P&WA Wasp Major R-4360 reciprocating engines.

• **Aviation Corp.** Negotiations are now in progress for establishing a production line of a military plane at the Aviation Corp. Nashville plant, now manufacturing some B-36 components.

►**The Problem**—Immediate problem with which Army, Navy and USAF are attempting to cope is to bring this nation's industrial potential to "standby alert" without disrupting the civilian economy. In doing this, service heads are presently forced to a program of "playing by ear." If the order for all-out mobilization comes within the next 18 months, major manufacturers, now partially in mobilization, will have been alerted. Each knows now, his place in the general order of battle of industrial mobilization.

McCone emphasized that the Air Force is following a policy wherever possible of establishing at least two sources of supply, separated sufficiently so they will not be vulnerable in event of attack, for planes and engine components. The Air Force is calling upon many industries outside the regular aircraft industry suppliers to meet this objective.

AiResearch Builds Inland Plant

Ground will be broken within the next 60 days in Phoenix, Ariz., for a new AiResearch plant which initially will cover about 60,000 sq. ft. and is planned for expansion to 250,000 sq. ft. if necessary.

To be called the AiResearch Mfg. Co. of Arizona, the new addition will be a sister division of the concern's Los Angeles operation. A 99-yr. lease covering 33 acres on the northeast border of Sky Harbor Airport has already been secured.

The project is being built entirely with AiResearch funds: an initial outlay of $1 million for the new division has been increased another $500,000 to provide for machinery. The structure will be a one-story, windowless design, completely air conditioned. It is scheduled for completion in June.

Wright Day

Tedder calls for air power to prevent war; awards presented.

Overwhelming air power for the western nations is the only alternative to meeting dictators' "hordes of human cannon fodder with similar masses of humans," Air Marshal Lord Tedder of the Royal Air Force declared at the Washington dinner, Dec 6, honoring the Wright Brothers' Kitty Hawk flights

Lord Tedder predicted that, if the Western Nations have sufficient air power "we may yet prevent a major war from breaking out long enough for the world to recover its sanity and avoid suicide." He appealed for close international cooperation between the 12 nations of the Atlantic Treaty Organization, and warned against the obstacles of inter-service jealousies and rigid traditions in the various treaty nations

Grover C Loening, winner of the 1950 Wright Memorial Trophy, forecast important technical aviation advancements in the future, and quoted specifications of what the 1970 airplane may "very well look like"

► **Loening's 1970 Plane**—Here are Loening 1970 plane specs

"It will cruise about 1200 to 1500 mph, be externally very much quieter, land almost vertically, have an auxiliary engine for taxiing, controls unaffected by air flow, landing gear suitable for land, water, or snow, variable sweepback, gust alleviation structure and seat springs to take the heavy air bumps at high speeds; it will be built largely of titanium, there will be less instruments for the pilot many more automatic operations and it will be fireproof in crashes"

Dr William Bollay, technical director of North American Aviation's aerophysics laboratory, delivered the 14th Wright Brothers Lecture of the Institute of the Aeronautical Sciences He discussed recent technical progress in aerodynamic stability problems and automatic controls, relating both to air craft and missiles

PRINCIPALS at the Wright Day dinner in Washington Lt John H Burton, Brewer Award winner; Marshal of the RAF Lord Tedder, main speaker, Grover Loening, Wright Memorial Trophy winner; Louis Leverone, president of the National Aeronautic Assn., who made the presentations

The Wright Trophy was presented to Loening, himself an engineer for the early Wright Brothers' company, and later developer of the Loening Amphibian and leader in many other aviation projects, for "public service of enduring valne to aviation in the U S"

Two other aviation award winners were introduced at the dinner

• **William P Lear**, winner of the 1950 Robert J Collier Trophy for "outstanding achievement in the development, perfection, application and production of the Lear F 5 Automatic Pilot and Automatic Approach Control Coupler System, which makes possible the safe landing of jet aircraft regardless of extreme weather or visibility conditions" (Through an inadvertence, some copies of AVIATION WEEK's issue of Dec 18 carried the wrong photograph above a caption reporting the award of the trophy to Mr Lear A recent photo of Mr Lear appears with this story)

• **Lt. John H. Burton, USN**, winner of the 1950 Brewer Trophy for leadership in Air Youth Education, for the Navy air education and model airplane program he conducted

Approximately 800 attended the Washington dinner, sponsored by the Aero Club of Washington largest observance of the Anniversary since the 1943 dinner, the last attended by the late Orville Wright

COLLIER TROPHY WINNER William P Lear watches autopilots move down his company's production line.

National Aero Assn. Elects Directors

National Aeronautic Association's executive committee accepted the resignation of William Enyart from NAA's board of directors and elected five to fill vacancies

Enyart, former NAA president and former president of Federation Aeronautique International, submitted his resignation after publicly criticizing the Association's "unsuccessful" structural organization

Elected to NAA board of directors were John Victory, executive secretary of National Advisory Committee for Aeronautics, Willis Brown, in charge of aviation education for the U S Office of Education, Melvin Nuss, President of American Association of Airport Executives, Benjamin Franklin, business manager of the Air Foundation, Ben Regan, Chicago, former state aeronautics official

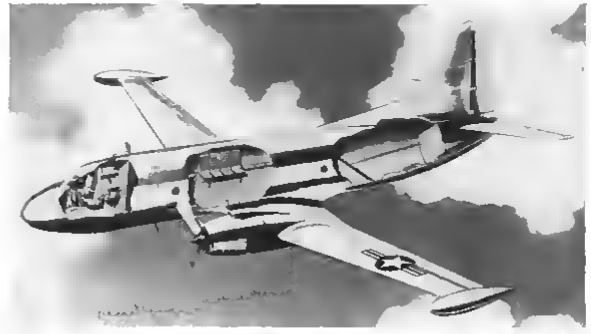
CAB Issues NWA 2-0-2 Crash Report

Probable cause of the fatal Northwest Airlines 2 0 2 crash approaching Twin Cities airport last March was the pilot's "attempt to complete a landing approach by visual means during which time visual reference to the ground was lost," according to the Civil Aeronautics Board report Fatalities were 10 passengers and crew of 3.

The Board states that visibility was ¾ mile variable, reduced by blowing snow; precipitation ceiling was 900 feet Slant visibility was relatively good, which permitted other flights to complete their landing approaches by visual reference to the runway But blowing snow could have created erratic visibility.

Fatal Flight 307 was flown 128 feet below the ILS glide path and 650 feet to the left of the localizer at a point 4180 feet south from the approach end of runway 35, where the aircraft struck a flagpole well marked by red neon obstruction lights, the report states

Maloperation of the ILS transmitters could not have caused the pilot to fly so far below the glide path and to the left of the localizer course, the report adds



UNOBSTRUCTED cargo hold of Airlift 4-0-4 should make for fast supplies-handling, and . . .

CLAMSHELL DOORS and built in ramp at rear simplify loading of bulky equipment

Martin Offers Military 4-0-4

'Airlift' would have capacity close to that of C-54; turboprop and piston-engine versions are proposed.

Proposals to build a military cargo and staff transport version of the Martin 4-0-4 twin-engine commercial transport have been offered to both the Navy and the Air Force by the Glenn L Martin Co

With 75 of the commercial planes now under construction at Baltimore for Trans World Airlines and Eastern Air Lines, Martin stands ready to produce a beefed-up 50,000-lb gross weight military cargo plane developed from the 4 0-4 design

Two alternate powerplant versions are proposed, using

• **Two P&W R-2800-CB-14** engines developing 2500 hp each

• **Two Allison T-38** turboprop engines, rated at 2750 hp and expected eventually to go to much higher rating

With conventional engines, the Airlift 4-0 4 would be capable of carrying 15,000 lb of cargo over a combat range of 1500 mi at 270 mph It is anticipated that the turboprop powered version would show performance boost of approximately 30 percent, increasing cruising speed to around the 325-mph mark.

It is estimated the plane could carry 54 combat troops with full equipment a combat range of 1900 mi, or 32 litter cases 2300 mi in 9 hr 15 min Fully loaded for personnel evacuation, the plane would have a maximum combat range of nearly 3000 mi

► **Capacity Close to C-54**—While the military version retains many advantages of twin-engine planes for short landings and takeoffs, its capacity would be very close to that of the current four engine C 54 military cargo transport, the manufacturer states

A rear cargo loading ramp, taking the place of the rear passenger stairway used in the commercial 4-0-4s, will provide loading facilities for mobile equipment and large crated items Smaller cargo items can be loaded through a front cargo door near the cockpit

The rear cargo opening is fitted with clamshell doors specially designed for wide angle opening, answering criticisms of some other clamshell door installations on cargo planes

Extra range is to be built into both versions by fitting additional fuel cells into the center wing panel, and by addition of wingtip tanks Wing tanks up to 800 gal. capacity can be considered for various missions

Martin has indicated a takeoff run of 2570 ft. (sealevel) at 50,000 lb gross, and 1850 ft landing run, for the piston engine version, and for the turboprop version a takeoff of 1980 ft and landing run of 1550 ft All figures are without takeoff assist or reverse propellers

It is understood that neither Air Force nor Navy has yet made any firm commitments for the military 4-0-4s

Scheduled Coach Gets New Life

Certificated western and transcontinental air coach operators have the go-ahead from Civil Aeronautics Board to continue coach services at present fares

These fares are 4½ cents a mile except for the special Los Angeles-San Francisco segment, where the fare is down to 3 cents.

CAB varied the duration of extensions with the individual case Trans world Airlines and American Airlines got one year extensions, using Constellations and DC 6s Northwest Airlines got only a 3-month extension of its DC-4 coach, pending CAB study of DC 4 coaches in general.

Coach services north of San Francisco also got only 3-month extensions But the special San Francisco Los Angeles coach services of United Air Lines and Western Air Lines got a 6-month extension

PRODUCTION

Douglas Awards Total $97 Million

Douglas Aircraft Co 's award of over $97 million for airplanes and spare parts was the largest negotiated contract in the total of $110,567,991 released by the Air Force for the week ended Dec 8 Other large contracts went to Sperry Gyroscope Co ($2,343,267 for compass components and electronic tubes) Radioplane Co ($3,632,370 for target aircraft spares); Grand Central Aircraft Co ($1,884,460 for aircraft engine overhaul) Irving Air Chute Co Inc ($1,169,767 for parachute and canopy assemblies)

The complete list follows

Adel div, General Motors Corp, Burbank, Calif, valve assembly, fuel, for airplanes, Cl 031, $69,520, valve assembly, fuel, for airplanes, Cl 031, $52 117

Beech Aircraft Corp, Wichita, miscellaneous assemblies, sub-assemblies, kits and spare parts for aircraft, Cl 28, $200,000

Douglas Aircraft Co., Inc., Santa Monica, model airplanes and spare parts, Cl 01D, $97,411,093

E. I. du Pont de Nemours & Co., Wilmington, Del, paper, photographic; filter assembly, photographic, Cl 10C, $34,761

Eastman Kodak Co, Rochester, photographic film, $636,366, photographic film, $228,663

Fine Organics, Inc., New York, disinfectant tablets, Cl 24, $167,872

Firestone Tire & Rubber Co, Akron, airplane casings & tubes, Cl 04C, $460,861

Gar Wood Industries, Inc, Wayne, Mich, spare parts for truck tractors, Cl 19C $69 272

General Cable Corp., Cincinnati, cable polychoroprene Cl 08D, $41,695

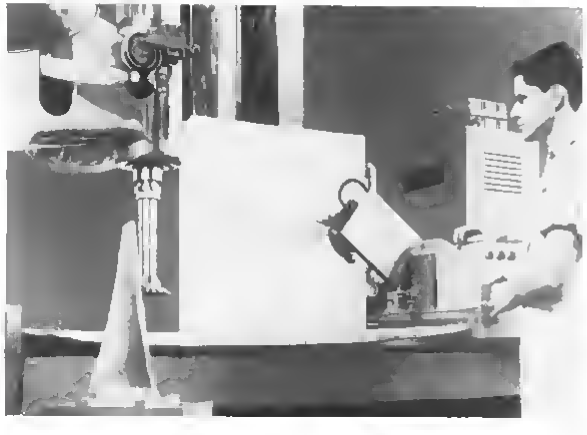
B F Goodrich Co, Akron, aircraft casings & tubes, Cl 04C, $64,620

Goodyear Tire & Rubber Co., Inc., Akron, airplane casings & tubes, Cl 04C, $38,575

Graflex Inc, Rochester, N Y, still cameras Cl 10B $338,958

Grand Central Aircraft Co, Glendale, Calif, overhaul of aircraft engines, $1,884,460

Grant Photo Products Inc, Lakewood, O. photographic paper, $32,736



ELECTRONIC CONTOUR FOLLOWER

A 97 percent saving in both cost and time is the dividend from a new scheme for fabricating jet engine compressor blade masters The novel method, developed by Pratt & Whitney Aircraft division of United Aircraft Corp, uses an electronic contour follower that cuts blade master cost from about $4000 to $100 and turnout time from approximately 100 days to 3 The electronic component, developed for F&W by General Electric Co, is automatically linked to a standard jig borer, and a photoelectric eye scans the contour of the compressor blade profile drawn on a metal sheet. The eye feeds the data to the jig borer to duplicate the contour on the master blank Successive cross sectional scannings, determined by the length and twist of the blade to be fabricated, gives a master that requires only a comparatively simple hand finish to remove the metal between jig borer cuts, blending the various profiles to make the finished unit.

Hamilton Standard div, United Aircraft Corp, East Hartford, Conn., turbo hydromatic prop assemblies, Cl 03A, $128,645.

Hammarlund Mfg Co, Inc., New York, radio receivers, $57,366

Hammond Mfg Co, Pasadena, type K1 trailers, Cl 19A, $68,076

Ingersoll Rand Co, Cincinnati, compressors, Cl 17A, $192,000

Irving Air Chute Co, Inc., Buffalo, canopy assembly, parachute assembly, Cl. 13C, $1,169,767

Walter Kidde & Co, Inc., Belleville, N J, bracket for gun charger mounting, valve seats and gun chargers, Cl 11B, $158,482

Marlin-Rockwell Corp., Jamestown, N Y, bearings—rod end, Cl 04D, $84,100

McPhillips & Co, Inc, Trenton, N J, pack assembly, Cl 13, $42,250

North American Aviation, Inc, Los Angeles, kits for service aircraft Cl 01M, $56,836

Pennsylvania Pump & Compressor Co, Easton, Pa, compressor, horizontal, Cl 17A, $55,760

Radioplane Co, Van Nuys Calif, target aircraft spares, Cl 28B, $3 632,370

Reid H. Ray Film Industries, St Paul, Minn, script & production of motion picture, Cl 28E, $37,058

Rychlik Engineering Co., Inc., Chicago, connector plugs, telephone jacks, Cl 05E, $25,440

Frank G. Schenuit Rubber Co, Baltimore airplane casings & tubes, Cl 04C, $115 227

Schwien Engineering Co., Los Angeles, modification of gyro assemblies, Cl 11F, $37,410

Sherwood & Co., Kansas City, Mo., naphtha, Cl 24, $26 209

Sperry Gyroscope Co, Great Neck, L I, N Y, compass components, Cl 05A, $2,192,037, electron tubes, Cl. 16E, $151,230

Speth-Faraday, Inc., Cincinnati, reflector assemblies, Cl 15 $72 297

Stanley Aviation Corp, Buffalo, downward ejection seat test apparatus, $31,673

Switlik Parachute Co, Inc, Trenton, N J, fabricate pad canopy release, tie pads to harness, Cl. 13, $49,200

Sylvania Electric Products, Inc., Dayton, photoflash lamps, $133 270

United States Rubber Co, Detroit, aircraft casings & tubes Cl 04C, $319,712

PRODUCTION BRIEFING

▶ **Lockheed Aircraft Service** has gotten a contract from the Colombian airline, Avianca, to do a major overhaul on the DC-4 and two DC-3s, including converting the DC 3s from passenger to cargo craft

▶ **Cyril Bath Co**, Cleveland, is expanding its Roto Contour Forming contract division to handle increased aircraft components forming business

▶ **Rohr Aircraft Corp.**, Chula Vista, Calif, has gone on a six-day 48-hr week to handle accelerated production schedules Employes now number 3300.

Air Force Award Information

Air Materiel Command Procurement Division makes available to AVIATION WEEK recent bid awards, shown on this page. Requests for further information should be addressed to Contracting Officer, AMC, Wright-Patterson AFB, Dayton, Ohio, attention MCPPSX72

ABSTRACTS

For 16 electric portable refrigerators (51-780):
Simplex Manufacturing Co Oakland Calif on a bid of $4850
For chain (51-516):
American Chain & Cable Co Inc American division, York, Pa on a bid of $4788
For copper silicon bronze seamless tubing (51-517):
The Mackenzie Walton Co Pawtucket R I on a bid of $4787
For 3348 cans synthetic rubber sealer (51-322):
American Latex Products Corp Hawthorne Calif on a bid of $3876 80
For bronze (51-444):
Riverside Metal Co, Riverside N J on a bid of $82 385 22
For blueprint bases (51 461):
Companies sharing American Expansion Bolt & Mfg Co Chicago Ill on a bid of $4134 Wright & Co Inc Worcester Mass on a bid of $630 and the Roth Office Equipment Co Dayton O on a bid of $585
For airport lighting control panels (51-551):
Companies sharing Metropolitan Electric Mfg Co Long Island City N Y on a bid of $11,456 and Continental Electric Equipment Co Ludlow, Ky on a bid of $1776 40
For 58 tester assemblies (51-583):
Eclipse Pioneer Div of Bendix Aviation Corp Teterboro N J on a bid of $13 431 55
For connector plugs (51-552):
Companies sharing Westinghouse Electric Supply Co Dayton O, on a bid of $23 139 U S Radio & Television Supplies Inc, Chicago, Ill., on a bid of $1250 and Cinch Mfg Corp., Howard B. Jones Div. Chicago Ill, on a bid of $2578 50
For 815 carbon monoxide detectors (51-221):
Mine Safety Appliances Co, Pittsburgh Pa on a bid of $5554 25
For shears (51-109):
Companies sharing Wysong & Miles Co Greensboro, N C, on a bid of $57 840 and Famco Machine Co, Racine Wisc on a bid of $18 608
For rivnuts and testers (51-588):
Companies sharing Grey Instrument Co Philadelphia, Pa. on a bid of $168 and Mansfield & Green Cleveland O on a bid of $8240
For 20 350 plug assemblies (51-565):
Whaling City Marine Co New Bedford Mass on a bid of $3200
For adapters (51-531):
Companies sharing D Anbe Co, Los Angeles Calif, on a bid of $189.35 Whitaker Paper Co Dayton O on a bid of $5286 85 and Burke & James Inc Chicago Ill on a bid of $1130
For gloves (51-491):
Companies sharing United States Rubber Co., Providence, on a bid of $30,743 84, Herbert A Greene and M L Snyder & Son Philadelphia on a bid of $2741 76, and Pioneer Rubber Co Willard O on a bid of $1577 25
For voltmeters (51-353):
General Electric Co Schenectady on a bid of $2435
For crystal units (51-574):
Monitor Products Co South Pasadena Calif on a bid of $8617 58
For 153 sanders (51-585):
Independent Pneumatic Tool Co., Aurora, Ill on a bid of $13 900
For temperature indicators (51-621)
Lewis Engineering Co, Naugatuck Conn on a bid of $11 085 26

For dismantling, cushion and loading of equipment (50-864):
Saron Packaging Co Inc., Cleveland on a bid of $4135
For generators (50-7455)
Jack & Heintz Precision Industries Inc. Cleveland, on a bid of $20 698 88
For conversion kits (50-484):
Crouse-Hinds Co, Syracuse, N Y on a bid of $13 246
For radio receiver R 120/ARN 12 (50-1517):
Schutlig & Co Inc. Washington D C on a bid of $139 085 28
For photographic parts (50-1555):
Companies sharing J G Saltzman Inc New York on a bid of $758; Lektra Laboratories Inc New York, on a bid of $3768 55; Minnesota Mining & Mfg Co St. Paul Minn on a bid of $810 Norman Willets Co, Chicago on a bid of $2200 and Testrite Instrument Co., Inc New York on a bid of $2240
For photographic equipment (50-1871):
Viewlex Inc. Long Island City N Y on a bid of $284 221 40
For camera covers (50-1953):
General Electric Co Bridgeport Conn on a bid of $37 601 80
For rework spare spare parts (50-1520)
Aircraft Products Co Clinton Heights, Pa. on a bid of $68 842
For 155 pitot static tubes (50-1562):
Aero Instrument Co Cleveland on a bid of $3797 80
For relay (50-1554):
Westinghouse Electric Corp Dayton O on a bid of $58,750
For re roofing of reservoir at GAP#5 Marietta Ga (50-1514):
Tumpane Co Inc Omaha Nebr on a bid of $42 886 78
For labor, material & equipment for installation of leading approach system (50-1616):
Helldoerfer Castellini, Dayton O on a bid of $40 990
For generators aircraft, engine driven (50-1555):
General Electric Co Schenectady N Y on a bid of $278 944 00
For radio compass (50-1057):
Companies sharing Bendix Radio Div., Bendix Aviation Corp Towson Md on a bid of $922 254 82 Ariel Co. New York on a bid of $5920 51 and Selectar Inds New York on a bid of $15 771 87
For generator sets (50-1528):
Companies sharing Continental Electric Co. Inc. Newark N J on a bid of $82 560; Hobart Brothers Co Troy O on a bid of $6920 and Kato Engineering Co Mankato Minnesota on a bid of $41 065
For vapor cleaner (50-1515):
Dayton Aircraft Products Co Dayton O on a bid of $627 200
For 25 radio training sets (50-1858):
The Newton Co Middletown Conn on a bid of $8726
For projectors (50-1552):
Television Associates Inc Michigan City, Ind on a bid of $150 517 24
For 165 light timing magnets (50-1075):
Standard Electrical Products Co., Dayton O., on a bid of $2849 25
For labor and material for placement, excavation, etc of electric meter (50-931):
Hughes Simonson Eng Co Dayton O on a bid of $2700
For trailers (50-1008):
Akeley Camera & Instrument Corp. New York, on a bid of $50 395
For boot repair switcher (50-1671):
Companies sharing Arrowhead Rubber Co., National Motor Bearing Co Downey Calif on a bid of $1628 and Concord Radio Corp Chicago on a bid of $1435
For lapping plates (51-718):
J C Busch Co Milwaukee, on a bid of $21 055
For photographic equipment (50-1853):
Companies sharing Radiant Mfg Co Chicago on a bid of $4506, and American Hard Rubber Co New York, on a bid of $2325
For repairs to roof of assembly bldg., Schlegel Air Force Plant (50-1515):
John Wessink & Sons Co, Cleveland on a bid of $132 053
For slotted line (50-1705)
Nichols Products Co, Morristown N J, on a bid of $21 865 48
For multimeters (50-1711):
Technicraft Corp Kansas City Mo on a bid of $16 575 60
For target assemblies (50-1823):
Companies sharing Commercial Metal Products Co Philadelphia on a bid of $9425 Mirex Chemical Products Corp. St Louis on a bid of $33 478 53 and Southline Metal Products Co Houston Texas on a bid of $87 460
For 5000 emergency kits (50-1814):
Lite Mfg Co Inc New York on a bid of $114 100
For lamp assemblies (50-1863):
Companies sharing C F Pease Co Chicago on a bid of $1182 80, Bardwell & McAllister Inc Burbank Calif on a bid of $241 44, J G Saltzman Inc. New York on a bid of $414 20 and Eastman Kodak Co, Rochester on a bid of $416 64
For timers and meters (50 1958):
Companies sharing J G Saltzman Inc. New York on a bid of $12 890 Kosmin's Camera Exchange, Philadelphia on a bid of $646 80 and Sieghenson Film Corp New York on a bid of $596 66
For target tow (50-1815):
Companies sharing Aeronca Aircraft Corp Middletown O on a bid of $88 582 94 Associated Co Inc Wichita Kansas on a bid of $895 10 American Chain & Cable Co Inc Automotive & Aircraft Div Detroit on a bid of $156 217 10 and Columbus Production Mfg Co Columbus O on a bid of $29 156 30
For projection equipment (50-1946):
Charles Beseler Co Newark N J on a bid of $22 886 25
For clothing (50-1943)
Companies sharing W A Apple Textile Mfg Inc Dayton O on a bid of $630 00 Blue Anchor Overall Co Inc Philadelphia on a bid of $4657 20 Great Lakes Gml Mfg Co Cheboygan Mich on a bid of $14 195 19 Simon Glove Co Inc Gloversville N Y on a bid of $567 72, Lite Mfg Co Inc New York on a bid of $580 64 and Sigmund Eisner Co Red Bank N J on a bid of $14 042 14
For manifold pressure transmitters (50-1556)
Eclipse Pioneer Div Bendix Aviation Corp Teterboro N J on a bid of $10 398 07
For generators (50-1221)
Westinghouse Electric Corp Dayton, O on a bid of $1 012 462 80
For relocation of motor generator set and switch gear (50-1233)
Helldoerfer Castellini Dayton O on a bid of $12 854
For valves (50-1304):
Aro Equipment Corp Bryan O on a bid of $2 890 50
For surface grinders (50-1734)
Companies sharing Cincinnati Milling and Grinding Machine Inc Cincinnati on a bid of $44 240 Landis Tool Co. Waynesboro Pa on a bid of $22 860 and Gallmeyer & Livingston Co Grand Rapids, Mich on a bid of $20 436
For canopy assemblies (50-1802):
J B Carroll Co Chicago on a bid of $4650
For aircraft generators (50 1035)
Jack & Heintz Precision Industries, Inc., Cleveland on a bid of $1 040 598 82
For primer assemblies (50-1350):
Moser Instrument Co Hudson O on a bid of $49 208 28
For call contract for service of blueline and whiteline reproduction (50-1551)
Companies sharing Dayton Blue Print Co. Dayton O on a bid of $50,000 Rapid Photo Service Inc. Springfield O, on a bid of $50 000 American Blue Print Co Hamilton O on a bid of $50,633 Reproduction Service Co, Dayton O on a bid of $50 000 Fred Wagner Co Cincinnati on a bid of $50 000 and Service Blue Print & Supply Co, Dayton, O., on a bid of $50 000
For indicators (50-1085)
Kollsman Instrument Div of Square D Co Elmhurst N Y on a bid of $12 917 20
For photographic supplies and data (50-1447)

Federal Manufacturing & Engr Corp., Brooklyn, on a bid of $1245,153

For indicators (51-608):
R. C Allen Business Machines, Inc Grand Rapids Mich, on a bid of $22 813 96

For stair assemblies (51 350)
Biederman Motors Corp Cincinnati on a bid of $48 810 64

For 121 step ladders (51 382)
Companies sharing Duo Safety Ladder Corp Oshkosh, Wis on a bid of $2210 07 Griffith Mfg Co Malden Mass on a bid of $68 60 and Manuel M Elkin New York on a bid of $97 50

For connector plugs (31-4991):
Ryebilk Engineering Co Inc Chicago on a bid of $25,440 80

For connector receptacles (51 502)
Companies sharing Continental Electronics Ltd. Brooklyn on a bid of $15 415 Kings Electronics Co Inc Brooklyn on a bid of $6102 American Phenolic Corp Chicago on a bid of $900 and Howard B Jones div Cinch Mfg Corp Chicago on a bid of $64 80

For regulator voltage (50-1072):
Eclipse-Pioneer div Bendix Aviation Corp Teterboro N J, on a bid of $44 949 78

For pneumatic portable drills (51-700)
Companies sharing Air Speed Tool Co Los Angeles, on a bid of $90,000 Arc Equipment Corp Bryan O on a bid of $128 020 Buckeye Tools Corp Dayton, on a bid $23 850 and Cleco div of Reed Roller Bit Co Houston on a bid of $42,350

For desk quarters (51-240):
Dorbler Metal Furniture Co., Inc., New York on a bid of $808 478 02

For collar pins (51-4981)
Companies sharing Lirb Hardware Corp Brooklyn on a bid of $2840 10 All Design Screw Mfg Co Inc New York on a bid of $2700 87 Air Associates Inc Teterboro N J on a bid of $2701 Anti Corrosive Metal Products Co Inc Castleton on Hudson N Y on a bid of $533 20 Hi Shear Rivet Tool Co Hermosa Beach Calif on a bid of $4854 30, American Steel Co Pittsburgh on a bid of $251 17, and Lamson & Sessions Co, Cleveland on a bid of $19 815 40

For connector plugs (51-508):
Companies sharing Molded Insulation Co Philadelphia on a bid of $2940 Kings Electronics Co Inc., Brooklyn on a bid of $3172 H H Buggie & Co., Toledo, on a bid of $2105 and American Phenolic Corp Chicago on a bid of $777 60

For connectors (51-611):
Companies sharing Radio Wire Television Inc New York, on a bid of $750 50 Eugene H Wile Philadelphia, on a bid of $2920 Kings Electronics Co Inc Brooklyn, on a bid of $711, Waltham Horological Corp. Waltham Mass. on a bid of $1500 and Westinghouse Electric Supply Co, Dayton on a bid of $1361

For bronze ingots (51-686)
Federated Metals div American Smelting & Refining Co, Cincinnati, on a bid of $28 220

For batteries (51-609):
Gould-National Batteries, Inc. DePew N Y on a bid of $130 358 40

For target indicator lamps (51-678):
Manufacturing div, Wee Engineering Co Dayton on a bid of $8508 18

For steel flexible (51-600)
The American Brass Co American Metal Hose branch Waterbury, Conn on a bid of $19 324

For light assemblies (51-920):
Grimes Mfg Co Urbana, O on a bid of $96 352 50

For alum alloy rivets (51-636)
Domont Aviation & Supply Co Long Beach Calif on a bid of $3243 58

For lead ale (51-644):
National Lead Co Cincinnati on a bid of $17 896

For aircraft batteries (51-666)
Electric Storage Battery Co Cleveland on a bid of $223 850 88

For adapter drives (51-680)
Barber Stockwell Co., Cambridge, Mass on a bid of $2685

For 303 steel typewriter stands (51-726):
Sherman Mason Corp St Marys O on a bid of $11 790

For electric portable grinders (51 745)
Preeler Products Co Racine Wis on a bid of $21 025

For wire marking machines (51-755):
Companies sharing Kinesley Stamping Machine Co. Hollywood Calif on a bid of $42 460 and Wynn Mfg Co Inc Philadelphia on a bid of $48 356

For 9 machines (51-703)
Independent Engineering Co Inc O'Fallon Ill on a bid of $21 470

For paint spray booths (51-840)
DeVilbis Co Toledo on a bid of $19-317 12

For buffers and polishers (51 803):
Companies sharing Brown-Brockmeyer Co. Dayton on a bid of $5202 50 and United States Electrical Tool Co Cincinnati on a bid of $15 722 75

For machines (51 858)
Lepel High Frequency Laboratories Inc New York on a bid of $47 400

For 2 air compressors (51-683)
Bury Compressor Company Erie Pa on a bid of $20 304

For reverse current cut-outs (51-200)
Companies sharing Hartman Electrical Mfg Co, Mansfield, O, on a bid of $80 869 70 and Phaostron Co, South Pasadena Calif on a bid of $1063 58

For engine assembly (51-234):
Biederman Motors Corp Cincinnati on a bid of $532 785 19

For clamp assemblies (51-315)
Companies sharing General Tire & Rubber Co Akron on a bid of $49 806 60 American Gas Accumulator Co Elizabeth N J, on a bid of $22 200 and Fyle National Co., Chicago on a bid of $820

For transformers (51-470):
Pacific Selenide Co, Los Angeles on a bid of $6773 85

For signal alarm panels (51-549)
Magna Mfg Co Inc Haskall N J, on a bid of $22 105 58

For 7000 mechanics aprons (51-226)
Hinson Mfg Co, Waterloo Iowa, on a bid of $21 300

For naphthalene (51-329)
Companies sharing Cole Laboratories Inc, Long Island City, N Y, on a bid of $2614 85, Tar Products div, Koppers Co, New York, on a bid of $5050 06 and Standard Products Co, Philadelphia on a bid of $240 90

For cleaner-parts cellulose power type (51-367):
Magnus Chemical Co Inc Garwood, N J on a bid of $11 568

For drawing bulletin boards (51-261)
Companies sharing Kay-Wood Products Inc Bedford Pa, on a bid of $320 Ohio Valley Slate Co., Cincinnati on a bid of $2147 95 Multiplex Display Fixture Co St Louis on a bid of $20 942 86 and The Miami Stationers Inc Dayton on a bid of $1653

For zinc (51-288):
National Lead Co Cincinnati on a bid of $44 800

For connector-adapter (51-314):
American Gas Accumulator Co Elizabeth N J on a bid of $814 046 00

For 18 974 gal alum polish (51-332)
R M Hollingshead Corp Camden N J on a bid of $10 858 68

For gasoline hose (51-382)
Hewitt Rubber div Hewitt Robins Inc Buffalo on a bid of $117,550

For 1000 airspeed tubes (51-392)
Aero Instrument Co Cleveland on a bid of $11,175

For cement and compound (51-416):
Companies sharing American Latex Products Corp Hawthorne Calif, on a bid of $48 170 24 Dow Corning Corp Midland Mich on a bid of $20 400 and W P Fuller & Co Los Angeles on a bid of $9750

For cleaning compound (51-433)
R M Hollingshead Corp Camden N J on a bid of $106 440 36

For 450 bins (51-434)
Olympic Industries Ltd Los Angeles on a bid of $8582 70

For connectors (51-435)
Companies sharing O E Szekely & Associates Inc Philadelphia, on a bid of $1140 Kings Electronics Co Inc. Brooklyn on a bid of $8002 30 American Phenolic Corp Chicago on a bid of $468 and Cannon Electric Development Co div of Cannon Mfg Corp Los Angeles on a bid of $2422 16

For 20 aerial navigation beacon towers (51-457):
International Derrick & Equipment Co Columbus O on a bid of $17 000

For 650 storage cabinets (51-464)
Buffalo Weaving & Belting Co Inc Philadelphia on a bid of $15 626

For motor generators (51-489)
Ideal Electric & Mfg Co Mansfield, O on a bid of $252 920

For presses (51-400):
Companies sharing Lempco Products Inc. Bedford O on a bid of $12,400 and Famco Machine Co., Racine Wis, on a bid of $3280

For aprons and coats (51-500)
Companies sharing American Optical Co, Southbridge Mass on a bid of $772 H Bernstein & Co Chicago on a bid of $41 275

For connector-plug (51-510)
Companies sharing General Radio Co Cambridge Mass on a bid of $820, Erie non Mfg Co Cleveland on a bid of $4280 Westinghouse Electric Supply Co Dayton on a bid of $7017 40, and Howard B. Jones div Cinch Mfg Corp, Chicago on a bid of $687 38

For 613 000 lb. steel plate type 2 (51-510)
Carnegie Illinois Steel Corp Cincinnati on a bid of $29 424

For cable (51-628)
Companies sharing Whitney Blake Co Hamden Conn, on a bid of $15,358 and General Electric Supply Corp Dayton on a bid of $10,180 68

For 100 motor oil meters (51-742):
Stewart-Warner Corp, Chicago on a bid of $2670

For vinanliser (51-227)
Food Mach & Chemical Corp John Bean div Lansing, Mich on a bid of $167 061 60

For 20,000 fishing kits (51-336)
Van Brode Milling Co Inc Clinton, Mass, on a bid of $165 000

For 802,820 lb phosphoric acid (51-417)
Octagon Process Inc., Brooklyn on a bid of $77 012 03

For 155 modification kits (51-400)
Taffet Radio & Television Co. Bronx, N Y on a bid of $4059 75

For bouling roline (31-524):
Valley Forge Flag Co., Inc., New York on a bid of $16 150

For 20 cabinets (31-344):
Macleod Company Cincinnati, on a bid of $82 435

For pump assemblies (31-588):
Aircraft Products Co., Clifton Heights, Pa., on a bid of $17 420

For brass tubing (31-388):
Wolverine Tube div. Calumet & Hecla Consolidated Copper Co., Inc., Detroit, on a bid of $310440

For chairs and stools (30-1353):
Companies sharing: Emeca Corp., Hanover, Pa., on a bid of $252 152 70, Doehler Metal Furniture Co., Inc. New York on a bid of $34 045 Roth Office Equipment Co., Dayton, on a bid of $25 ,00 and National Chair Co., St Louis on a bid of $2226 20

For race and cradle assemblies (31-588):
Companies sharing: Orange Roller Bearing Co., Inc. Orange N J on a bid of $287 50; Rollway Bearing Co., Inc., Syracuse, N. Y. on a bid of $1434, and Marlin-Rockwell Corp., Jamestown, N Y, on a bid of $165 880

For 17,700 transformers (31-381):
American Gas Accumulator Co., Elizabeth, N J on a bid of $305 172

For battery testers and tester assemblies (31 440):
Companies sharing: Godgels Inc., Dayton, O., on a bid of $11 233, and Heyer Products Co., Inc., Belleville, N J., on a bid of $15 050

For connectors (31-307):
Companies sharing: American Phenolic Corp., Chicago, on a bid of $5420 80, and Cannon Electric Development Co., Div. Cannon Mfg Corp., Los Angeles on a bid of $1200 10

For solder (31-512):
Victory White Metal Co., Cleveland, on a bid of $27 305 50

For dolly assemblies (31-413):
Alrqnigment Co., Burbank, Calif., on a bid of $29 525 73

For cut-out, reverse current (31-740):
Hartman Electrical Mfg. Co., Mansfield O., on a bid of $72,617 60

For 135 map tracks (31-788):
Colson Corp., Elyria, O., on a bid of $9298 75

For oxygen trailers (31-378):
Hammond Mfg. Corp., Pasadena, Calif on a bid of $106 820 25

AF Invitations to Bid

Bid openings are 20 30 days after approximate issue dates shown in the following bid proposals. Bid sets containing specifications for items to be procured will be sent to qualified applicants who write local field office, stating bid invitation number.

One bid set will be available for examination without obligation by prospective bidders, after bid publication date, at each of the seven AMC procurement field offices. This will enable firms to see specifications before writing or telegraphing for their own bid sets.

Procurement field office locations: Boston Army Base, Boston 10, Mass., Government Aircraft Plant No. 4, Ft. Worth 1, Tex., 39 S LaSalle St., Chicago 3, Wright-Patterson AFB, Dayton, Ohio, West Warren and Longo Aves., Detroit 32, 155 W Washington Blvd., Los Angeles, 67 Broad St., N Y 4.

Windlass assemblies, 1-13 items, bid invitation No. 51-1230, issue date 1 Dec., delivery starting within 30 days, complete within 60 days.

Aircraft jacks, 1-3 items, bid invitation No. 51-1257, issue date 1 Dec., delivery 1st article within 45 days, balance within 7, days after approval of 1st article.

Directional couplers, 37 each, bid invitation No 51 1259, issue date 1 Dec., delivery on or before 1 April 1951.

Truck, engine parts, 6 each, bid invitation No. 51 1261, issue date 1 Dec., delivery within 60 days.

Steel chrome nickel, 3419 ft., bid invitation No 51-1248, issue date 1 Dec., delivery within 30 days.

Hoist assemblies, 1-2 items, bid invitation No. 51-1258, issue date 1 Dec., delivery within 150 days.

Jack assemblies, 104 each, bid invitation No. 51 1280, issue date 1 Dec., delivery 1st article within 90 days, balance within 180 days after date of receipt of Government approval of 1st article.

Camera, motion picture, 20 each, bid invitation No. 51-1283, issue date 11 Dec., delivery complete within 80 days after date of award.

Amplifier, 652 each, bid invitation No. 51-1264, issue date 11 Dec., delivery 50 each per month starting 150 days after date of award.

Magazine camera aircraft, 60 each, bid invitation No. 51-1266, issue date 11 Dec., delivery of first article 60 days after receipt of contract, 25 each within 60 days after approval of first article, balance in 120 days.

Gage, 1-3 items, bid invitation No. 51-1281, issue date 11 Dec., delivery starting within 150 days after date of award.

Reel, and slot, 1-2 items, bid invitation No. 51-1290, issue date 15 Dec., delivery within 30 days after date of award.

Heater gun, 1-2 items, bid invitation No. 51-1297, issue date 16 Dec., delivery of sample for test within 60 days, remainder at rate of 2000 per month within 60 days after approval of first article.

Chemicals Class 24, 1-13 items, bid invitation No. 51-1298, issue date 15 Dec., delivery within 90 days after date of award.

Kit modification, 556 each, bid invitation No. 51-1303, issue date 16 Dec., delivery within 45 days after date of award.

Sling assembly, 10 each, bid invitation No. 51-1300, issue date 26 Dec., delivery within 150 days after date of award.

Fiberglas Ducts

Evaluation indicates superiority over metal. Expanded usage foreseen.

The increasing usage of Fiberglas ducting in aircraft design in place of metal indicates that it approaches being an ideal material, peculiarly suited to aircraft requirements.

What are the actual advantages offered by Fiberglas ducting and what, if any, are its limitations? And, considering the impressive reputation already established, what are the future possibilities of the material?

▶**Many Advantages**—According to the Arrowhead Rubber Company of Downey, California, the principal manufacturers of this type of ducting, the advantages are many, the limitations few, and the potential design possibilities virtually unlimited. Arrowhead's Airtron ducting is used on practically every U. S. civil and military airplane in production today.

• **Light Weight**—Fiberglas is lighter than any comparable material. Weight reductions of more than 50% over metal ducting are common.

• **Resists Vibration**—Fiberglas ducting actually absorbs vibration, reduces noise level and eliminates failures caused by vibration.

• **Corrosion Proof**—Airtron is impervious to salt spray, fungi, and mildew. Types resistant to aromatics, alcohol, lubrication and hydraulic oils and kerosene are available.

• **Fire Resistant**—Airtron meets aircraft standards for fire resistance per specification ASTM D626-41T.

• **Wide Temperature Range**—The temperature limits on Fiberglas ducting have been increased substantially by Arrowhead's development laboratories. Types now available are serviceable at —100° to +600° F.

• **Cost Savings**—In many cases Fiberglas ducting costs less than metal. One airframe manufacturer's cost comparison study revealed a 46.3% saving.

• **Versatility**—Airtron is available in a wide variety of standard constructions, or it can be custom fabricated in any conceivable shape.

The Arrowhead Rubber Company, who are credited with the original development of rubber impregnated Fiberglas ducting as well as the majority of improvements since, have recently published a manual giving complete engineering data on Fiberglas ducting. It is available without charge from the company's Airtron Sales Department in Downey, Calif.

Lockheed F-90 is Transonic Contender

Needle-nosed craft is runner-up in recent evaluation by USAF of four comparable penetration fighters.

By David A. Anderton

Lockheed's F-90 penetration fighter copped second place in the recent U.S. Air Force evaluation conducted at Edwards AFB, Calif.

Runner-up to the McDonnell XF-88 (AVIATION WEEK Sept. 4), the Lockheed plane found itself in a tough field which also included North American's F-93A and Republic's F-84F.

Although its entry came in second, Lockheed Aircraft Corp. can find some consolation in the thought that the winner didn't get any prize, either.

The prize—a contract for future procurement—is being held in abeyance pending a Senior Officers Board appraisal of aircraft needs for the USAF. Once the reassessment has been made, there is a chance that the current standings of the four entrants may be shuffled.

This analysis is the second in AVIATION WEEK's series on the four fighters.

▶**Lockheed Entry**—Basically, the F-90 is a twin-jet fighter with sweptback surfaces. It is powered by two Westinghouse J-34 engines.

Span is 40 ft.; length, 55 ft.; height, 15 ft.

Design gross weight of the aircraft varies considerably depending on the mission. Highest takeoff weight is 32,550 lb., design gross is 27,700 lb.

Development of the craft began in August, 1945, and after the usual preliminary design configuration studies, the final choice was made and accepted by the Air Force in the spring of 1947. Taxi tests started about two years later, in May, 1949. First flight followed on June 6, 1949.

By March 1950, the second F-90 had arrived at Edwards for its testing. Late in June of this year, the F-90s began the competitive evaluation.

In the following treatment of the F-90 design, much of the data came from photo interpretation and a brochure called, 'Lockheed in the 1950's.'

▶**Wing Geometry**—There are two official dimensions relating to the wing span is stated to be approximately 40 ft. and sweepback is given as 35 deg. Using these two figures and the released three-view drawing, the rest of the wing geometry can be developed.

Checking the three-view shows that the quarter-chord line, where sweep is generally measured, has an angle of a little less than 31 deg., but that the leading edge sweep is indeed 35 deg.

Root chord of the wing is about 12.5 ft. and the tip chord is somewhere around 4.6 ft. Resultant taper ratio is about 2.7.

Gross wing area including the portion blanketed by the fuselage figures out to be 342 sq. ft. Geometric dihedral is zero, and there is no obvious twist to the wing. Thickness ratio is low, about 8 percent.

Double slotted flaps, conventional ailerons and leading edge slats are fitted. Ailerons are power boosted.

▶**Wing Structure**—The main wing beam is located at about the 40 percent chord, and is L-shaped in plan. The short leg of the L projects forward at the inboard end of the beam.

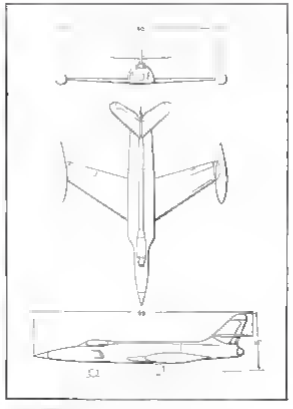
Aft of the main beam is a closed structure extending chordwise to the flap and aileron hinge beam. In subassembly, this portion of the structure is fabricated integrally with the wing beam. The forward portion of the wing is a separate subassembly.

Wingtip fairing is in three pieces, and slats, ailerons and flaps are of course separate assemblies.

In spite of the thinness of the wing, it appears that fuel is carried in both leading and trailing edge structure.

▶**Variable Sweep**—There has been much conjecture about the use of variable sweep on the F-90. Early design

LOCKHEED F-90 in ground view shows needle-nose and aft position of swept wing.



THREE VIEW shows sleek, long fuselage.

VERTICAL TAIL towers high, mounts swept stabilizer in controllable assembly. Nose detail shows radio bay, gun blast doors.

proposals specified the use of such a wing which would have essentially zero sweep at takeoff and landing. There are some indications on the prototype airplanes that such a scheme has been incorporated.

For instance, there is the peculiar structure of the wing with its L-shaped beam.

There is absence of any connection angle between the wing root and the fuselage. The fuselage side appears cut out to take the root section of the wing, and the rivet pattern in the wing root is partially submerged within the fuselage—a fairly unconventional practice.

Moreover, the L beam lends itself to the scheme. It would seem possible to hinge the wing at the leading edge using a vertical hinge pin through the extreme forward end of the L. Sweep could be adjusted by means of a screwjack mechanism which would increase or decrease the actual distance between the main beam fuselage connections.

▶**Useful Fuselage**—Structural heart of the F-90 is the fuselage midsection. It is divided into four bays by five major bulkheads.

Most forward bulkhead of the five is at the pilot's back. It would also appear from photos and drawings that the first fuel tank bay begins at this bulkhead and runs aft to the next one.

Scoop inlets are fabricated as separate assemblies and are fastened to the structure between the first and second frames.

Second bulkhead frame marks the start of submerged ducting. Third bulkhead in line is located close behind the second and between the two there is evidence of very rugged structure. The back face of the third frame is shown to support the main wing hinge fittings.

Between the third and fourth bulkheads is a second fuel bay, and at the fourth, the fuselage ducting ends and the engine inlets begin.

It is likely that the forward support point for the J-34 engines is located on the fifth bulkhead.

A pair of hydraulically actuated dive brakes and four RATO bottles are mounted on the fuselage belly just forward of the last bulkhead.

▶**Tail Attached**—The tail section assembly is apparently rigidly attached to the aft end of the midsection, rather than in the F-80 style where the entire tail cone is quickly removable for engine accessibility.

Forward part of the fuselage is not much more than a streamlined fairing around the cockpit. Ahead of the pilot's position there is a bay which contains the aircraft battery and radio equipment. Access to this bay is through two hoods, hinged along their upper edges and secured at the bottom with trunk latch types of fasteners.

There appears no obvious way to get at the engines for maintenance. It might be expected that the tail section comes off or that side or top fairings are quickly detachable. But a glance at the photographs shows that these members are all buttoned up tightly with rivets.

It's possible that access doors are in the belly, although the low ground clearance would make working there uncomfortable and inconvenient. Also,

NARROW TREADED landing gear of F-90 is rugged. Hook at right holds RATO bottle.

AIRBORNE SEAT takes off from ejection mechanism incorporated in cockpit design.

the installation of RATO and dive brakes doesn't seem to leave much room for doors through which engines could be hauled. This point must remain a puzzle for the moment.

▶**Westinghouse Jets**—Currently, the F-90 is powered by two Westinghouse J-34 axial-flow jet engines which develop about 3000 lb. sea level static thrust.

These engines will probably be replaced later by the Westinghouse J-46 engines, of nearly identical dimensions but considerably higher thrust.

Flow is straight through, air enters the side scoops, is turned gently into the fuselage, passes through the engines and out the twin tailpipes. Bleed ducts remove the low-energy boundary layer air at the scoop inlet and discharge it through the outer upper surface of the scoop through three rectangular exits.

▶**Wagging Tail**—The F-90 has an adjustable stabilizer, which is not new, but it is actuated by moving the entire tail assembly, which is new. To begin with, the sweptback horizontal tail is attached rigidly to the equally swept vertical tail. Judging by the looks of the thing, the vertical surface is pivoted at or near its leading edge, and has a screwjack mechanism—in all probability similar to the one for the wing—mounted near the midchord.

Stabilizer incidence is then altered by moving the entire tail assembly about the leading edge of the fin.

Since the first flights of the prototype F-90, some changes have taken place in the vertical tail. First, a large fairing has been located at the intersection of the vertical and the horizontal tail surfaces.

This fairing extends aft of trailing edge of the elevator by a considerable distance, and therefore the rudder has had to be redesigned, or at least reworked.

Originally continuous, the F-90 rudder is now split at the fairing into two sections.

▶**Landing Gear**—Undercarriage is tricycle, in keeping with current practice. Main gear is a third-class lever. Its central leg contains the shock strut which terminates in a pivot end. The pivot supports a strut (the lever) which has the wheel mounted at one end and a fixed hinge point support at the other.

Main gear retracts inward, with the well being closed by a main door, supported at the fuselage centerline, and a secondary door which is attached to the main gear shock strut.

Nose wheel is standard, it uses an offset leg shock strut with torque scissors. Retraction is forward and closure is accomplished with a single rectangular door.

▶**Armament**—Six guns of unspecified caliber are mounted in the F-90. For this installation, Lockheed has departed somewhat from the centerline fire arrangement popularized in the Lightning and the Shooting Star. Presumably the wealth of radar gear in the nose has made the relocation necessary.

In any event, the gun battery is located on either side of the fuselage just below the ducts. Spent links and cases are ejected through the standard chutes terminating on the undersurface of the wing root section.

▶**Tip Tanks**—F-90 tip tanks are rather unusual in detail although not so in broad outline. The tanks have a cutout in the side to receive the wingtip, forward of this cutout is a fin-like piece which looks as if it is a fairing for the filler neck. The arrangement suggests that these tanks continually replenish wing tanks.

▶**Future Plans**—Right now, the future of the F-90 is uncertain. Although fiscal 1951 funds included planned procurement of about 100 of the Lockheed planes, this has since been canceled.

Offhand, it would seem that the current F-90 is underpowered. The 6000 or so available pounds of thrust just doesn't seem capable of shoving the huge bulk of the F-90 through the skies at anything approaching sonic speeds.

But with bigger engines and afterburners, there is reason to believe that the F-90 should be capable of transonic performance.

From there on, it's up to the Air Force.

Jet Turbo-Starter

Latest RAF jet fighters will be fitted with a new "turbo-starter" now in production by Rotax Ltd., British accessories manufacturer.

This turbine unit is connected directly to the engine and is powered by a charge of cordite to develop 150 hp in a few seconds. Two cordite chambers are used—one for the start and the other for a spare.

Reports are that the new starter will bring the engine up to speed quickly and cut considerable time from the present takeoff period.

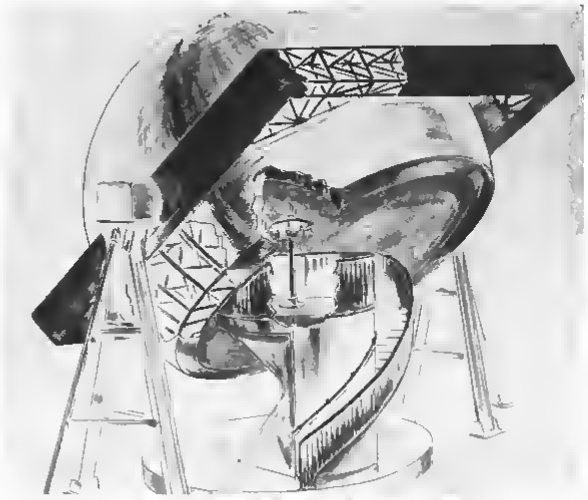
IN CONVAIR S SHOPS at San Diego, the Allison Turboliner takes shape Partially complete plane waits installation of

ALLISON 501 turboprop engine Nacelle contains monocoil for

INSTALLATION of 2750 hp engine Plane is to fly at year's end.

Allison's New Turboliner

TURBOLINER will be flight research aircraft for Allison Division of GMC



PLANETARIUM like D-2 Celestial Navigation Trainer can train six students at once.

High Latitude Navigation Trainer

Link's newest unit emphasized high speed flight in Arctic regions; has wide range of variables.

Significant and timely emphasis on high speed Arctic navigation by the USAF is indicated by its recent acceptance of a special navigation trainer

The 22-ton, planetarium-like unit, built by Link Aviation, Inc., has been dubbed "D-2 High Speed, High Latitude Celestial Navigation Trainer."

Developed and designed by Link in close cooperation with Air Materiel Command, Wright-Patterson AFB, the unit is said to be "... the first ground training device capable of reproducing polar region navigating problems with an accuracy consistent with present training problems."

Link also asserts that the trainer will help to reduce costly and often hazardous special navigation training flights over polar regions by permitting a great deal of evaluation and experimentation on the ground. The manufacturer points out that the trainer will be a valuable tool in developing the science of navigation. Uses along this line may range from the evaluation of a new type of sextant to applied research into a means of automatic celestial navigation.

► **Over 500 Stars**—The celestial dome represents the heavens of the entire northern hemisphere plus 35 deg. of the southern hemisphere. In the dome are set all first and second magnitude stars, plus some of the third magnitude. To these have been added 23 of the important navigational stars which are collimated for navigational purposes. All major stars of a total of over 500 have been located within an accuracy of 1½ min. of arc, this being equivalent to less than 1/12 of an inch.

The dome is mounted on a gimbal, and an instructor may move it to simulate terrestrial travel and sidereal time while the rotatable observers' platform, rising in the center of the dome, duplicates the aircraft's heading. The dome's inside diameter is 30 ft.

► **Precision Drives**—A two-speed servo drive system, similar to that used in certain radar equipment, drives the dome about its two axes. The power unit is characterized by high torque output for a limited space.

Such slow movements are required that the reduction gearing from 1/30 hp. motor to gimbal is 144,000 to 1. This permits the passage of time to be represented by a rate of rotation of only .000694 revolutions per minute. Maximum operating speed, used when flights are conducted at high speeds close to the pole, is .005 rpm. or slightly in excess of seven revolutions per day.

Reset speeds allow the dome to be reset to any starting position in about 15 min.

Servos also actuate the platform.

► **Analogue Computers**—Manual controls feed analogue computers which in turn command the servos. The inputs represented by these manual controls define items varying from the control of the theoretical airplane, air speed, climb angle, to settings relating to the celestial dome position.

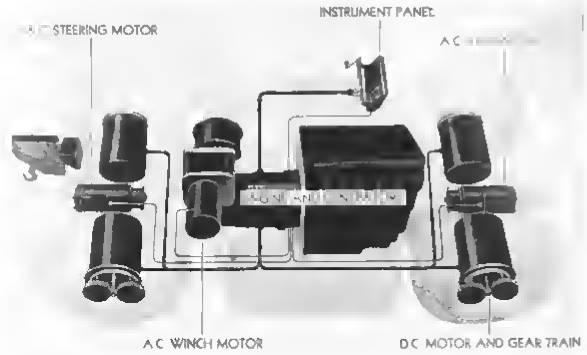
Most computations at the input stage do not require great accuracy since pilots cannot fly planes to minute tolerances anyhow because of slight instrument errors, variable wind conditions and the like. An accuracy of 2 percent is sufficient at this stage.

However student navigators have to be able to pin point the position of the dome exactly. And the instructor has to be able to correlate with great precision the readings of his instruments with those obtained by the navigators so that he may have a valid measurement of their work. Degree of accuracy of values at this later stage is held to .004 percent.

Range of variables at the instructor's disposal are:

- **Airspeed**—0 to 1500 knots.
- **Altitude**—0 to 100,000 ft.
- **Terrestial position**—25 to 90 degrees north latitude.
- **Radius of action**—up to 15,000 nautical miles.
- **Wind velocity**—0 to 300 knots from any direction.
- **Free air temperature**—+40 to −70 deg. F.
- **Six at Once**—Six students at a time may take sights from the observers' platform using periscopic sextants. These six trainees are in constant communication with the instructor and also furnish data to a larger group of students, thus increasing the capacity of the D-2 trainer. The unit provides facilities for up to 30 additional stations where student navigators are given flight and celestial information enabling them to solve navigational problems between periods of actual sight taking.

This complete trainer should be able to provide future USAF navigators with problems simulating anything they will encounter in actual flight for many years to come.



PHANTOM view of "Tournatow." Note ac-dc generating, control, distribution system

Bigger Pull for Biggest Planes

Tournatow," a new and versatile prime mover designed for the USAF, has just been announced by R G Le-Tourneau, Inc, Peoria, Ill One unit has already been sent to Alaska for service

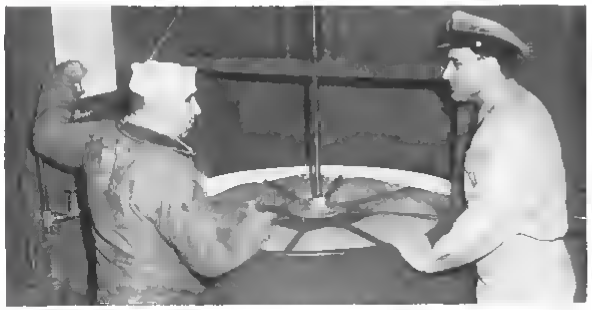
Designed to tow very heavy aircraft as well as perform other chores, the machine is the first of its kind to incorporate diesel-electric drivers on rubber tire mounted heavy equipment, according to the maker's claim The self-contained diesel engine drives a three-phase ac generator, a dc generator and a 12 cfm air compressor

The ac current is used to steer the unit (both front and rear wheels are steerable) and power a winch which draws a cable through a patented fair lead

Dc current is fed to four motors to drive the wheels in which they are mounted through simplified drives The drive consists of a pinion, two reduction gears and an internal ring gear The diesel-electric unit completely elimi nates drive clutches, transmissions and differentials

The machine can tow a 400,000 lb aircraft, yet accelerate smoothly

• **Function as an auxiliary** powerplant Current supplied by the two generators could supply power for airport lighting, engine starting, welding equipment and other miscellaneous electrical requirements



LEAK DETECTOR FOR INNER TUBES

Detecting a leak in large, hard-to-handle inner tubes of airplane tires can be a clumsy, man hour consuming job

The rig illustrated above is being used very effectively at the Sands Point Naval Air Station, near Seattle, Wash. to submerge a Consolidated PBY main gear inner tube A surplus PBY actuating cylinder, operated by compressed air, pushes a six legged, metal tubing spider against the inner tube, sub merging it completely in the tank

Principal advantage claimed of the device is that one man can now do a job previously requiring six or eight

Points on Plug Care Given by Champion

"No matter how well a spark plug is made, its efficiency can be destroyed by careless or improper installation techniques " So says H H Vogel, Champion Spark Plug Co's director of engineering, who offers these following simple rules to prolong plug life and avoid premature removals

▶ **Gasket Care**—Two-fold purpose of the spark plug gasket is to

• **Seal the plug** against compression leakage

• **Provide a bridge** for heat to flow from the plug to the cylinder head to be dissipated

A new gasket should be used every time a plug is installed It is important that the plug be tightened with a torque wrench to the point recommended by the manufacturer Insufficient compression allows hot combustion gases to blow past the plug, overheating it Plug temperature also is increased because loosely installed gaskets retard the transfer of heat from plug to cylinder head

Conversely, an over tightened gasket loses its natural resiliency and cannot expand and contract with temperature and pressure variations Another problem caused by overtightening is distortion or cracking of the steel shell resulting in internal leakage in the body of the plug

Gaskets should not be bent to prevent them from slipping off during installation This, too, destroys the gasket's sealing ability A little grease will hold the gasket in place

To keep gasket from cocking at an angle screw in plug finger tight straighten gasket then torque up the plug

▶ **Thread Care**—Clean plug threads are important A carbon coating creates an effective barrier to heat transfer, encouraging the list of overheating and pre ignition

Another advantage of clean threads is that they do not bind when plug is installed, thereby allowing proper gasket seating

Plug threads may be cleaned with a wire brush or wire buffing wheel If the latter is used care should be taken not to damage the electrodes or firing end of the insulator

Cylinder head threads should be cleaned with a clean out tap If unavailable, another spark plug with notched threads will do the trick

If used plugs are re installed, it is a good idea to lubricate threads with a small amount of oil

Tool to use in installation is a deep socket wrench of proper size to avoid fracturing the insulator

NEW AVIATION PRODUCTS

High-Altitude Rubber

A molded rubber cover designed for use as a grease retainer on universal joints in aircraft is being produced by the Stalwart Rubber Co.

The cover, made of Stalwart No. 808 Neoprene-base rubber compound, was developed for use in military aircraft which reach altitudes above 40,000 ft.

One reason Stalwart engineers selected this compound is that tests showed it could withstand ozone concentrations found at high altitude of as much as .003 percent for a six hour period. The rubber also stands up to temperatures ranging from —87 to 240 F. It has a tensile strength of 2315 psi, a durometer hardness of 60, elongation of 400 percent and a permanent set of 3 percent. It will resist petroleum products, prolonged weathering, constant flexing and wear resulting from metal-to rubber contact, the firm says.

Stalwart will produce a variety of molded, lathe cut, extruded or punched parts of this material to meet individual requirements. Address: 179 Northfield Rd., Bedford, Ohio.

For Flight Forgings

A new type of hot-working die steel, which the maker promises will be particularly useful in making forgings for aircraft parts, has been developed by the Heppenstall Co.

Called "Prestem," the steel is being marketed in the form of solid press, insert and upsetter dies and punches. The company says the material has characteristics which reduce heat checking to a minimum—a cause of fatigue failure—and resist the plastic flow of hot metal during press forging operations. These attributes reportedly are based on a precipitation hardening phenomena where "Prestem" picks up temperature and develops an increase in surface hardness.

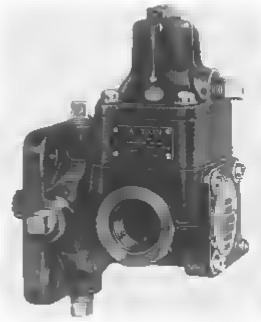
The metal also can be machined easily at comparatively high hardness, has a high impact resistance. Address: 4620 Hatfield St., Pittsburgh, Pa.

Cleans Plane Parts

Expanding its line of aviation chemical products, particularly those serving in aircraft maintenance operations, Fine Organics, Inc. now offers "Stratosene."

This product is a rapid drying solvent, blending ingredients which give it low toxicity, a high flash point and zero residue, according to the maker. It's designed for cleaning of electrical and mechanical parts, and "may be used for many applications formerly performed with carbon tetrachloride," the firm says.

Stratosene's flash point is 140 F., somewhat lower than that of its companion product, "Stratolene," which has a flash point of 190 F. and is a slower drying solvent. Both solvents are supplied in 5 and 53 gal. drums. Address: 211 E. 19 St., New York 3, N. Y.



Fuel Pump for L-19

Production of a new 100-gph., non-pulsating, engine-driven fuel pump, built to operate at temperatures down to —70F., and accommodate aromatic fuels, is underway at the Romec division of Lear, Inc., Elyria, Ohio.

First units produced are intended for use on Continental engines powering Cessna L-19 liason-observation planes, Romec says. A positive-displacement, rotary vane type with a "non-pulsating developed bore," the pump weighs 1.94 lb and is designed to meet Specification MIL-P-5355. It is designated Model RG-9080 by Romec, Type G-18 by the Air Force.

The new pump has high suction lift, is self-priming and can be used with ordinary gasoline, or fuels with as high as 30 percent aromatic blends.

A bypass valve is built integrally with the balanced relief valve which is adjustable from 2½ to 20 psi.

Compact Hose Fitting

Lightweight, space-saving compactness and strength are emphasized in the design by Resistoflex Corp. of a new line of aluminum alloy hose fittings for aircraft.

These single-piece fittings are machined out of solid, forged stock and are the reusable type for assemblies made up with MIL-H-5511 (AN H-24) hose for fuel, oil, coolant and hydraulic lines, the company says. They already have been added to purchasing lists of several aircraft engine firms, it reports.

Integral construction and sturdy wall sections give extra resistance to fatigue, while fine internal finish and smooth bend radii result in flow with a minimum of turbulence, the firm explains.

Fittings with 45 or 90 deg. elbows and with straight flanges are available. Mounting flanges meet AN specifications. Address: Belleville 9, N. J.

ALSO ON THE MARKET

Small hermetically-sealed relay provides any contact combination up to DPDT, has sensitivity of about 40mw. Unit is designed to withstand better than 10G vibration at frequencies of more than 60 cps. Made by Sigma Instruments, Inc., Boston 21, Mass.

Extra-strong hack saw blade has high-speed steel cutting edge integrally welded to strong steel center, in turn welded to tough steel back. Impact resistant part has qualities needed for fast, sustained cutting of tough materials, says maker, L. S. Starrett Co., Athol, Mass.

Midget buzzer for use in aircraft delivers medium-intensity, audible tone signal, operates on 6 to 48v d.c. Part has phosphor-bronze springs, hard-drawn silver contacts, weighs 1½ oz. Made by Auth Electric Co., 34-20 45th St., Long Island City 1, N. Y.

Low gallonage nozzles are designed to deliver extremely fine and uniform fog droplets through "pin jet" impinge ment principle. Available in 10 orifice sizes from .015 to .080 dia. with flow rates from 1 to 100 gph. Made by Bete Fog Nozzle, Inc., Greenfield, Mass.

Dividend Record

U. S. Certificated Air Carriers

Carrier	1950	1949	1948	1947	1946	1945
	(Paid Per Common Share)					
American	$0 25	nil	nil	nil	nil	$0 20
Braniff	0 25	nil	nil	nil	$0.45	0 60
Capital	nil*	nil	nil	nil	nil	0 25
Chicago & Southern	0 50	$0 35	nil	nil	nil	0 25
Colonial	nil*	nil	nil	nil	nil	nil
Continental	0 25	nil	nil	nil	0 15	0 15
Delta	0 50	0 25	nil	$0 25	0 50	0 50
Eastern	0 25	nil	nil	nil	0 50	0 25
Mid-Continent	0 50	0 50	nil	nil	nil	nil
National	nil*	nil	nil	nil	nil	nil
Northeast	nil*	nil	nil	nil	nil	nil
Northwest	nil*	nil	nil	nil	0 50	0 50
Pan American	0 50	0 25	$0 50	0 25	0 50	0 25
TWA	nil*	nil	nil	nil	nil	nil
United	0 75	nil	nil	nil	0 50	0 50
Western	nil*	nil	nil	nil	nil	nil

* 1950 Estimated

Dividends Reflect Carrier Boom

Resumption of common stock payments by American and EAL points up rising trend of aircraft shares.

Airline dividends are being resumed and increased. This was the trend as 1950 came to a close and resulted in higher aggregate distributions to stockholders this year as compared to 1949. With airline finances being strengthened by the current level of operations, 1951 should reflect further increases in dividends on airline common stocks.

It is significant that 1950 airline distributions, on the whole, were far short of the total payments made in either 1946 or 1945. (See table above.)

The return of two members of the Big Four to the dividend paying column on common shares bolstered disbursements considerably this year.

Last year, dividend payments among the domestic airlines, on common shares, were confined to a few of the smaller lines.

These payments during 1949 were confined to Mid-Continent, Chicago & Southern and Delta. In the aggregate they were less than $450,000.

When American paid a dividend of 25 cents a share on its common stock this month, it represented a cash distribution of about $1 625,000. Similarly, Eastern's distribution of a like amount per share meant a total payment of some $575,000.

Pan American World Airways remains with the longest string of unbroken dividends among the entire air transport group. For 1950, the company declared a year-end distribution of 50 cents per share, double its 1949 payment. During 1936, Pan American paid the equivalent of 40 cents per share on its present stock. Payments were continued in 1937 and 1938 but omitted in the following two years. In 1941 dividends were resumed at the rate of 50 cents per share on the present stock and held at that level through 1944. In 1945, a reduction to 25 cents per share was made with fluctuations continuing between that level and the 50 cent rate in subsequent years. Pan American now has a span of ten years of consecutive dividend payments.

The resumption of dividend payments by Eastern was heartening to airline adherents in view of that carrier's well known conservative financial policies.

The United management has publicly indicated a desire to make dividend disbursements to its common shareholders at the earliest opportunity. The current recovery in earnings permitted the company to make a 75-cent payment to stockholders late this month. This returns another member of the Big Four to the dividend payment lists of airline common shares. The company previously paid 50 cents per share annually from 1943 through 1946.

►**TWA May Lag**—TWA is also known to favor dividends to its shareholders. In this instance, however, a somewhat longer time lag may be in evidence. The company has a heavy debt retirement schedule along with a major capital equipment expansion program. The demands on cash may accordingly postpone the time of a distribution to stockholders. The sole payment made by TWA goes back to 1936 when 25 cents per share was paid.

Braniff resumed dividends with a 25-cents-a share payment this month. The company started quarterly disbursements of 15 cents per share late in 1943 and maintained this schedule until the fourth quarter of 1946.

Western, with its Reconstruction Finance Corp. loan, is unlikely to reward its stockholders with a distribution until further reductions in debt can be accomplished or its obligations refunded in private banking channels. The sole payment noted in Western's record goes back to 1936 when 25 cents per share was paid.

Northwest, also faced with heavy debt obligations to the RFC, and contending with difficult operational problems, is unlikely to resume common stock dividends for some time to come. The company paid 50 cents annually from 1943 through 1946, inclusively.

Colonial, National and Northeast all have the dubious distinction of failing to make any cash payments to their common stockholder at any time. National, which in the past has paid a few stock dividends on its common shares, may enter the cash-paying group of airlines next year.

►**Preferred Stock Strong**—Occupying senior positions are the 400,000 shares of American Airlines 3½ percent preferred and United's 93,000 shares of 4½-percent preferred. These issues have maintained an unbroken dividend record since their inception. In retrospect this record has given these issues higher credit ratings and will benefit their companies in event of any subsequent financing.

Northwest Airlines was less fortunate with its 390,000 shares of 4 6 preference shares. The company was forced to suspend dividend payments on this issue early this year. It resumed disbursements, clearing up past accumulations, a few months ago. However, the suspended payments and the lingering doubts as to the maintenance of dividends on its senior equity, have weakened its credit position.

The continued payments of dividends on airline shares is very important to any improvement in investing standings for airline equities. There are increasing pressures by shareholders everywhere for income from their holdings. To obtain investment commitments by stockholders, the airlines must hold out the promise of a return. The failure to do so will, in time, drive these funds elsewhere where income will be more readily assured.

—Selig Altschul

LETTERS

Parts, Not Planes

The statement of Mr Murray D Lincoln (in his recent address before the Co Operative League of the U S A and reported in an editorial Nov 13) was actually a typographical error, inasmuch as what was meant was that certain airplane parts had increased in price as much as 287 per cent I want you to know that there was no intention in the speech to engage in a diatribe against the aircraft industry or to accuse the industry of unconscionable profits

DONALD E KRAMER Research Analyst
Farm Bureau Life Insurance Co
Columbus, 16, Ohio

Meant for Motorist

Your editorial Nov 6, "Relax, But Don't Overdo It," has just come to my attention No doubt it amused your readers — and no doubt you enjoyed writing it

However since the billboard carrying the message, "Next Time Try the Train, Relax" was a Southern Pacific board, I'd like to make a few comments

The board is a standard 42 ft highway bulletin, not double size, and is one of a series placed along western highways in an effort to get the private motorist to use our trains, since we consider the private automobile our chief competitor

Most motorists know that the campaign is aimed at them judging from the letters we get, and most newspapers Advertising trade magazines, which you probably don't read, have given a good deal of space to our campaign, which has gone on for nearly 15 years, since this campaign was designed in an unusual way as to locations so as to have the message reach the motorist when he was in a certain frame of mind, either tired, overwarm from the summer heat, or aggravated by the curves in mountain territory The one word sales message is varied according to the conditions

The illustrations in our present series of boards depict the auto driver, himself, so there seems no reason why the airline tycoons should feel aggrieved

However, with fine streamlined trains comfortable lounging facilities etc, on our trains I think we have a legitimate right to promote train travel as comfortable and relaxing

We have long conceded that the airplane has the advantage of speed We can't compete on that basis However, we have a service to offer which many people like and enjoy and will use, despite the airplane

It is somewhat of a mystery to me why airline people get so much pleasure jumping on the railroads unless they have an inferiority complex They go around the country telling the public and the press how they are going to run the railroads out of business For the past 15 years they have been running advertisements directly referring to the railroads, comparing the services, speaking of the crawling train below, the soot and cinders of railroad travel, the noise of railroad travel, quoting comparative fares with frequent errors as to railroad fares (it's strange how the errors are always in the airline's favor)

And then when the railroadmen, who are not all Caspar Milquetoasts, get tired of all this and put in a few jabs in their own advertising as to airline travel the wails of anguish from the airline people are pitiful They then take a high holier than thou attitude, and complain bitterly

I don't care particularly for people who like to "dish it out" But I have a lot more respect for such of them who can also "take it"

F Q TREDWAY Genl Advtg Mgr
Southern Pacific Co
65 Market St
San Francisco 5, Calif

(The picture showed a train passenger, not a motorist As the railroad which last spring issued the very funny booklet about the train that couldn't fit SP proved it had sense of humor That booklet wasn't any "wail of anguish" Our editorial wasn't either SP dished it out then Now we're just asking Mr Tredway to "take it" in kind.—ED)

Slick 'Passengers'

Who said Slick doesn't haul passengers? A look at the photo enclosed and you'll see proof that Slick is moving in on the lucrative passenger field

The photos were taken in Dallas recently when Henry Ford's original, hand built tractor was enplaning for an air ride back home to the Edison Museum in Detroit Grandaddy of all Ford tractors, this almost 3000 pound iron and brass monster had been loaned for display at the Texas State Fair

The passengers on this memorable occasion were props used in the display at the Fair It was a first flight for them, too

Funny thing about this whole deal—the tractor came down to Dallas via rail, and the charges were something over $500, I hear When the Stewart Co (Texas distributors for Ford tractors) heard that Slick's backhaul rate to Detroit was $5 20 per hundred they informed us their $15,000 charge would be returned via truck at a rate of $3 59 per cwt We got it because of insurance rates Via truck it would have cost them close to $100 for insurance alone; while via Slick, insurance amounted to only 10¢ per hundred dollar valuation Via air, the freight charges were $40 more, but insurance via air was about $80 less! And there are those who say air freight is too expensive!

ROBERT G STRONG
Slick Airways, Inc
Dallas Texas

Govt. & Loans

I have just finished reading your article, "Government Backs Defense Loans" (Aviation Week, Oct 23), and I find after talking with both of our local banks that it will take more than reactivating the loaning agencies of the government to get money in the hands of small business in areas such as the one we are in

The local banks have had no dealings with any such type of manufacturing as is required by the businesses trying to get into government procurement

Our local bankers refuse to bother with the paper work involved in any loans which will net them less than 5% They feel that if they refuse long enough the governmental agencies seeking to aid small business will have to increase the interest rate.

We have been on the registered bidders list with the Air Materiel Command for the past five months but to date we have been unable to make any bids due to the lack of financial support

The contracts that have been let during this time have been articles that we could manufacture but the cost of raw material has been so high that we could not handle the purchase of the stocks required

I have brought this point up with you with the thought that, if it were made known, some suitable action could be taken by others trying to get going on government loans or contracting I hope something might be done to overcome this mighty step in small business getting into the procurement programs offered to them.

JACK K DANIELS
SerVair Accessories
Williston N D

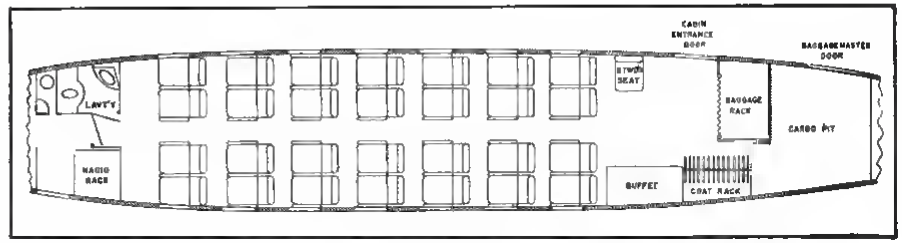
Super DC-3

I have just finished reading Lee Moore's splendid story on the Super DC-3 in Aviation Week In our opinion, it is an outstanding effort and represents an appraisal of an airplane that must play an important part in our transport thinking of the future

I congratulate you on a splendid job of objective reporting. While obviously I am prejudiced in view of the fact Capital is involved, I am sure that the article will prove of real interest to the readership of your fine magazine because of the very great interest which I have noticed among personnel concerning this airplane.

HAYES DEVER
Secretary and Director, Public Relations
Capital Airlines
Washington, D C.

AIR TRANSPORT



UNITED AIR LINES is converting its fleet of 59 DC-3s to carry 28 passengers each, to the seating arrangement shown in the cut above.

Defense Puts Spotlight on DC-3

Threatened loss of four-engine equipment for military transport lends importance to modernization plans.

By F Lee Moore

The old DC 3 may soon be in for strong demand of its services once again, as in World War II. Airlines are looking at three basic ways to stretch DC 3's payload, in case four-engined planes go to war while home traffic demand skyrockets.

Ways to raise DC 3 revenue payload from its present standard of 21 passengers and 25,200 lb gross weight are

• **Add passenger seats.** United Air Lines is converting seven of its 59 DC-3's to 28 passenger seating density. Some lines (including Capital Airlines and All American Airways) operate with 24 passengers.

• **Switch operating regulations.** You may operate the DC-3 with gross take-off weight increase of 1000 lb to 26,200 lb. if you accept certain limitations of runway length and altitude for your entire DC-3 fleet.

• **Swap for Super-3**—Cost of converting existing airline DC-3 to a 31-passenger super DC-3 meeting T-category is about $250,000, according to latest Douglas Aircraft Co. estimates.

The old DC-3's waiver from T-category requirements expires in three years, but will probably be renewed, under stricter operating regulations such as those now voluntary under part 42 of Civil Air Regulations.

▶ **Pack 'Em In**—The idea of putting 28 passengers in the DC-3 is very old, but its practicality is new. American Airlines and Northeast Airlines tried it then later ripped out the extra seats at great expense—mainly because they felt the passengers didn't like it. Southwest Airways operates with 27 passengers, having removed the rear luggage compartment.

But United's conversion is the fanciest to date, with double row of foam-rubber seats on both sides, plus complete rearrangement of facilities.

When United decided on the conversion last spring, the world was fairly peaceful. Now United's idea looks like a stroke of genius, because they're losing some DC-4s to the Korea Airlift already and rising warclouds threaten a major loss of four-engined equipment for all airlines before the new Super Constellations and DC 6Bs are ready for delivery.

▶ **United's Conversion**—United's converted job takes off from Chicago for Moline with 28 passengers and average gasoline load of 180 gals. Yet in still air, over this short run, it can still pack 560 lb of baggage and cargo.

The first of United Air Lines' 28-passenger DC-3s is now flying between Lincoln, Neb., and Chicago. Six more are scheduled for conversion, but progress is delayed by DC-4 modifications for the Pacific lift.

Operations Vice President J. A. Herlihy says these planes are for route segments "where load factors are high but where use of larger equipment is impractical." The converted DC-3s have seven rows of double seats, plus the steward's seat. The standard DC-3 has a double row on one side and a single row on the other, totaling 21 passengers instead of 28.

Along with the large increase in seat density, United has made some other changes:

INTERIOR of converted DC-3 shows how baggage rack, at rear, is closed off in flight.

• **Lavatory is moved forward,** replacing the forward cargo bin.

• **A baggage rack** is just to the left of the passenger door. The rack cuts back somewhat into the rear (and only) cargo bin. Passengers can therefore carry their bags aboard if they wish.

• **Coat rack** is opposite the passenger door.

• **Steward's seat** faces sideways, located just to the right of the door.

• **New Buffet** is opposite the steward's seat. The remodeled buffet contains all meal service needs, including service equipment. It is arranged for faster and easier serving.

United's San Francisco maintenance base is doing the conversion job—ordinarily taking about three weeks for each plane.

Flight 135 leaves Chicago at 1 00 pm and stops at Moline, Iowa City, Des Moines, Omaha, arriving Lincoln at 6 30 pm. Intermediate mileages are 145, 57, 109, 118, and 55 mi., a total of 484 mi.

Flight 218 leaves Lincoln at 7:00 pm and stops at Omaha, Des Moines, Cedar Rapids, arriving Chicago 11:10 pm. Intermediate mileages are 55, 118, 103, and 205 mi.—a total flight of 481 mi.

▶**Boosting Gross Load**—A few operators, notably Delta Airlines, have chosen to operate their DC-3s under Part 42.80 of the Civil Air Regulations. Under this, a plane with G202A or S1G3G engines can take off with 26,200 lb. gross weight from a sealevel field having 3450 ft. of effective runway. But runway length requirements go up rapidly with altitude. So low level operators or big-runway operators can accept these regulations. But people going into small airports or mountainous territory prefer to operate under the original T-category, which sets flat takeoff minimums for a gross weight of 25,200 lb. but without the strong penalty for small field or high altitude operations.

Capital Airlines, for example, has airfields where runways are 200 ft. shorter than Part 42 allows for a 25,200 lb. gross weight. This would penalize gross weight more than 3000 lb. (Capital planes have C202A engines, operated with G102 power settings.)

▶**Swap Offered**—The airlines have asked to have the gross landing weight raised to the same 25,200 lb. as takeoff. CAB offers a swap that the airlines refuse to buy. CAB offers, effective Dec. 20, to permit landing weights the same as takeoff only if the carrier puts all his DC-3 fleet under the Part 42.80 regulation.

This in effect changes the subject on the airlines. What they ask is landing weight the same as takeoff permitted under the standard T-category waiver now in effect for DC-3. The nettled airlines say the landing restrictions they ask are merely a matter of structure, not engine operating settings.

CAB states its offer this way:

"It is our opinion that such higher weights are justified for non-transport-category airplanes only if they are operated in accordance with the operating limitations established for such aircraft in Part 42, therefore the Board is authorizing the operation in passenger service . . . at maximum landing weights not exceeding their presently certificated maximum takeoff weight for passenger use when such planes are operated under operating limitations established pursuant to current provision of Part 42 . . . effective Dec. 20, 1950. . . . And provided further . . . that all of its (airline's) aircraft of related types be operated thereunder."

American Airmotive Corp. recently completed a manual for operation of DC-3s with Pratt & Whitney engines under the newer Civil Air Regulation—takeoff 26,200 lb., landing 26,000 lb.

▶**Dilemma**—The DC-3's gross weight restrictions will probably remain at 25,200 lb. for takeoff and 24,400 lb. landing for most airlines, unless the Board decides to let structure alone govern landing load restrictions and takeoff restrictions CAB's idea is to goad the airlines into adopting the new regulations for DC-3 operation. But if the airlines don't accept the alternative operating conditions, the only chance for lifting the landing restriction to the same as takeoff is that war conditions may influence CAB and CAA to permit the carriers to raise the landing weight.

The main hope of DC-3 operators pinched for equipment is either to raise passenger capacity of the DC-3 or buy more or bigger planes.

Right now, there are 505 DC-3s in U. S. domestic and foreign commercial operations: 364 domestic scheduled passenger and cargo, 3 domestic scheduled authorized for cargo only; 9 intrastate; 55 scheduled international; 22 scheduled for both domestic and international service and 52 nonsked.

TRANSOCEAN'S SNOWBIRD

First commercially licensed DC-3 to be fitted with CAA approved skis is this Transocean Air Lines transport leaving Oakland for Pt. Barrow, Alaska. It will aid in Arctic airlift supplying the Navy's Petroleum Reserve No. 4 and provide mercy service among the Eskimos. The skis were designed and built by Federal Aircraft Works, Minneapolis. They are 14 ft. long and total weight of 420 lb. Wheels can be lowered through the skis for landing on surfaced runways and the gear is retractable. The snow gear, used by USAF and Navy, was modified and CAA-approved by TAA.

Comet Coming

Possibility seen of early jet service on N. Y.-Caribbean run.

By Frederick R. Brewster
(McGraw-Hill World News)

London—The de Havilland Comet will be introduced into regular commercial service about Sept. 1, 1951, according to BOAC's chairman, Sir Miles Thomas.

First delivery of the four jet civil airliner to BOAC is expected about February and, after familiarization trials until August, during which time another three planes are expected to be delivered, the first scheduled passenger flights will be inaugurated.

The initial services to be operated by the Comet will be BOAC's flights from London to Cairo, Karachi and Calcutta. Soon thereafter, BOAC expects to introduce the Comet also on the London-Johannesburg run. Services all the way to Sydney, Australia, may be expected by the following summer.

▶**No Ocean Crossings Yet**—Trans-Atlantic services are not contemplated in the early stages of BOAC's utilization of the Comet. But, it is possible that the jet transport may be introduced to American travelers on some such service as a New York-Nassau or New York-Jamaica run.

Trans-Atlantic operation without refueling is not within reach, at the moment, although BOAC is studying with interest the current tests of in-flight refueling. But, competitive circumstances (such as the introduction of jet transports by a competing airline) might alter BOAC's present feelings about this.

These glimpses into the future were obtained from a luncheon talk with Sir Miles in London. In the course of the talk, Sir Miles also disclosed that BOAC had finally succeeded in breaking through the ceiling and made a $30,000 profit in September of this year. This has been the result of steadily growing traffic, administrative economies applied in the two and a half years since Sir Miles took over the reins, and the gradual replacement of uneconomic aircraft by larger and more efficient planes. In this period, BOAC reduced its payroll from 24,000 employees to 16,000.

The effect of introducing newer and better aircraft is best illustrated by citing two pertinent figures:

- **Capacity of BOAC's fleet** increased from 3¾ tons to 5¾ tons per plane.
- **Block-to-block average speed** of this fleet increased from 180 mph. to 212 mph.

▶**More Speed, More Capacity**—The

higher cruising speeds of the newest aircraft increases the passenger-carrying capacity of the fleet by increasing the number of round-trips per year per plane. Nine Comets, operated continuously (on a practical basis, not a theoretical one) throughout one year, would be able to carry the same number of passengers across the Atlantic as does the Queen Elizabeth. And this capacity would be achieved, Sir Miles pointed out, at about half the capital investment—figuring that at today's values, the capital cost of a ship the size and efficiency of the Queen Elizabeth might be approximately $225 million to $250 million.

Sir Miles characterized the Brabazon 1 as just a flying laboratory, and said that the turboprop-powered Brabazon 2 was a "very dark horse" prospect, with its engines still not yet fully developed nor their design yet frozen.

▶**Air Travel Cheaper**—In the face of world-wide inflation, the cost of air travel has not advanced a corresponding amount and is steadily becoming a better bargain. Off-season fare reductions make it even more attractive, Sir Miles said. In passing he took a verbal swipe at those non-scheduled operators who cut down on passenger comfort and contribute nothing to making more confirmed air-travelers.

Sir Miles cited some effects on scheduled travel-time to Australia when the Comets are in operation all the way to Sydney. Present schedule, calling for three-and-a-half days elapsed time, would be cut to about 35½ hours. Time to Calcutta, India, which is now about two days, would be cut to about 18 hours.

▶**New Lease**—Plans are underway to give the Comet a new lease on life.

The big four-jet transport, already facing technological obsolescence because of recent engine developments, is to be fitted with axial-flow jet engines, replacing the present de Havilland Ghost centrifugal types.

At present, it has not been decided whether the new engines will be Armstrong Siddeley Sapphires or Rolls-Royce Avons.

Primary purpose of the change is to take advantage of the axial-flow engine's increased efficiency—which will be reflected in reduced fuel consumption—to boost the Comet range.

▶**Long-Term Planning**—The "new" Comet has been in the de Havilland plan book for some time. Development of the Ghost engine was expected to improve fuel consumption characteristics by about 5 percent; it follows that even greater improvement can be expected from the large axial units.

Experimental plans have also been made to carry additional fuel in wing leading edge tanks.

The resulting long-distance Comet should be able to cover the non-stop transocean stages, a job which the present version was never intended to do.

On the Atlantic runs, for example, the new Comet should be able to halve the present London-New York flight time of nearly 18 hours, against prevailing headwinds.

ACC Readies Navigation Blueprint

Air Coordinating Committee has readied its blueprint of equipment procurement and development and methods for air navigation and traffic control 1951-63.

The all-weather, or "common," system plan is pegged on the following anticipated air developments:

- **Traffic increase** will be 5 percent annually to 1963.
- **Twice the schedule frequency** of last year will be operated at major terminal areas by 1963.
- **Peak-hour demand** at terminals will increase about 50 percent by 1955, compared with 1949.
- **Instrument approach** volume at air traffic control centers will at least double by 1955.
- **Extra capacity** must be built into the common system so it is capable of rapid expansion to meet defense requirements at any time.
- **Jets do not fit** into the air traffic control system so far because of lack of flexibility of the present system. System must rapidly become capable of handling jets and helicopters.
- **Number of controlled airways** is approaching the maximum coverage in the vicinity of congested terminal areas.

▶**Equipment Needs**—The status of present installation programs follows. The numeral immediately after the program refers to the number now operating, the bold face numeral refers to those underway, and the figures in parentheses refer to those now programmed.

- High intensity approach light, 5, **23**, (23).
- Precision approach radar, 5, 16, (21).
- Instrument landing system, 94, 77, (171).
- VHF omnirange, 271, 148, (419).
- Distance measuring equipment, 0, 20, (433).
- Airport surveillance radar, 5, 44, (49).
- VHF/UHF automatic direction finder, 0, **53**, (58).
- Mechanical interlocks, 6, **42**, (48).
- Fan markers, 273, 9, (282).
- Radio beacons, 115, **15**, (130).
- Radar beacons, 71, 0, (71).

Present development programs include radar safety beacon with air search radar modifications, and limited data transfer equipment.

Further development programs are

ATC data transfer and display, ATC signalling system, traffic delay predicter, ATC plotting display, remote radar display, airport surface detection equipment

▶ **Equipment Contract Schedule**—Latest schedule for equipment development to the production contract stage, according to ACC, is

• **Production start 1951-2.** Radar beacons, safety beacon modification for ASR radar, limited data transfer equipment

• **Production start 1953-5.** Airport surface detection equipment, ATC data transfer and display equipment, ATC signalling system, traffic delay predicter, ATC plotting display, remote radar displays

Boeing Estimates Jet Price at $2.5 Million

Adequate financial backing remains the big hurdle ahead of a plane manufacturer considering production of a jet airliner

The problem was detailed by Fred Collins, vice president for sales, Boeing Airplane Co., at a recent regional meeting of the Institute of Aeronautical Sciences in Seattle, Wash.

First decision necessary would be whether one or two prototypes should be constructed. Two would be desirable, to avoid the danger of "having all one's eggs in one basket," but would increase the cost, estimated by Collins at between $5 million and $20 million.

▶ **100 for Profit**—Sale price of a large jet airliner was estimated by Collins at $2,500,000. Boeing would have to build 100 to make a profit, turning them out at the rate of four a month, Collins believes. This would necessitate financing of $130 million to $150 million a year.

Where this financing would come from is a real problem, the Boeing official declared, particularly since Boeing has to go to the banks for some $45 million on the B-47. This is despite the fact that Boeing's financial position is the best in the history of the company.

Collins dismissed equity financing as a last resort. Boeing would like the military to order a jet transport and pay for the development costs, after which Boeing could utilize this developmental work in construction of a jet airliner, but there appears no immediate likelihood of this.

▶ **Pig in a Poke**—"If we built a jet transport, I'm convinced the Air Force would place a contract, but building without governmental aid would be very difficult," Collins said. Boeing has spent nearly $1 million in the past six years on wind-tunnel work relating to jets.

SHORTLINES

▶ **Air Transport Assn**—ATA'S executive vice president, Robert Ramspeck, reveals that scheduled airlines have completed 596 trips across the Pacific in support of the Korean struggle in the first four months of the airlift. They have operated 36,924,077 ton miles of lift and carried over 5584 tons of military cargo. Military traffic handled during calendar 1950 is seen as being over three times the 1949 total, exceeding $12 million.

▶ **American Airlines**—Compact, attractive 12-page booklet being distributed by AA, "Winter is Wonderful," explains in non-technical terms the numerous air and ground devices making for dependable flying in spite of weather. The carrier notes that last winter it maintained 96 percent schedule regularity during last November through February.

▶ **BACA Airlines**—Missouri intrastate scheduled airline has applied to CAB for certificate of convenience and necessity on routes between Columbia and Jefferson City and Kansas City and St. Louis. The carrier has been operating on this route over 6 months.

▶ **British Overseas Airways Corp**—White-blue-and-silver color scheme has been made standard on all the line's planes. Tests showed that painting top surfaces white has lowered cabin temperature 12-15 deg. in hot climates. The new coating is also said to make for easier maintenance.

▶ **Colonial Airlines**—Annual peak holiday exodus from New York to Bermuda and Montreal has resulted in heavy bookings for carrier's Skycruiser flights in both directions, with four extra sections put on for N. Y.-Bermuda runs and two extra between N. Y. Montreal.

▶ **Eastern Air Lines**—New York spokesman for the carrier flatly denied stories that the carrier was planning to move its major administrative offices in New York to Miami as an economy measure. EAL President Rickenbacker has been quoted as saying that the move had been considered for several years and was awaiting cost study data. Over 1000 employes were reported involved in such a transfer.

▶ **Northwest Airlines**—Passengers can fly from any point on the line's system direct to Bermuda for low-cost package vacations under new plan coordinated with Colonial Airlines. The package deals include transportation, hotel accommodations and sightseeing tours in Bermuda.

▶ **Pan American World Airways**—A $250,000 modification program on its Latin American Convair-Liners has raised takeoff weight to 41,790 lb. from previous 40,500 lb. authorized. The company has inaugurated a new three-roundtrip weekly service to Paris with Stratocruisers and plans to extend the service to Rome. New service will initially carry 47 passengers each flight; 44 extra round trip flights have been set up to handle the pre-Christmas travel rush from the U. S. to Latin America.

▶ **Railway Express Agency**—Air Express shipments in and out of the New York metropolitan area from January to October registered a 22.5 percent gain over the same period in 1949 and gross revenue was up 22.2 percent ($2,776,989).

▶ **Western Air Lines**—For the first nine months of 1950 the carrier showed a 48.9 percent gain in revenue passenger miles over the same period last year, with mileage flown up to 164,691,000. Cargo jumped 98.4 percent for the first three quarters of 1950 over last year's similar period. The carrier has flown nearly 23,000 charter miles this year, already surpassing last year's total.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT — BUSINESS EQUIPMENT — USED OR RESALE

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***NEW ADVERTISEMENTS** received Thursday will appear in the issue mailed the following Friday subject to limitations of space available.*

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NEW YORK: 500 W. 42nd St. (18)
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Send resume of training and experience, date available and references.

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CAA Approved Landing Gear Fairings complete with wheel covers
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STRICTLY PERSONAL

STRICTLY PERSONAL—Congratulations to Republic VP Brig Gen Mike Scanlon, who was married recently The couple lives in Washington, D C **Scholer Bangs**, ex Aviation News and AVIATION WEEK, is aviation writer on Los Angeles Herald Express

Stanley H Evans, free lance aviation writer under this and other names, left the West Coast to join Short Bros & Harland, Ltd **E Lee Talman**, long with TWA, becomes administrative VP and a director of Lever Bros Jan 1, leaving Coca Cola Co as treasurer

Dan Holmes, general sales manager of Parker Appliance Co , Cleveland, and **S E Tony Voran**, advertising manager, have been piling up plenty of experience in making forced landings—at the ice rink of Cleveland Skating Club More congratulations—to **Mel Adams**, aviation public relations counsel in N Y Just married

* * *

ADS THAT PULL—**Marie Adams**, for long years secretary to AW's editor sends an ad from Denver Post by LAMSA It says 'BARGAIN MEXICO FREE HUS BANDS!' Marie isn't personally interested, however She and husband **Charlie Adams**, formerly our Transport Editor, are very happy together Thes are enrolled in University of Colorado at Boulder

* * *

THAT BRITISH SENSE OF FITNESS—"Did you notice that England's Fairey Air plane Co has its plant in a town in Middlesex?" **Ed Bauman** writes

* * *

NORWEGIAN HELL IS COOLER—One unexpected item in the assets of AOA was the privilege of selling tickets to Hell, notes PAA News Bureau Manager **John Creedy**. With ont adding any comment of our own, we just go ahead and qnote Creedy 'It seems that from Oslo a ticket can be bought for $1 20 ronnd trip to a tiny old-world village on a fjord 32 kilometers outside Trondheim named Hell AOA people now in FAA say this particular Hell is not warm It's just south of the Arctic Circle

* * *

ADVICE TO THE AIRBORNE—Dr **Von Flugen** is enjoying a well earned vacation from the column this week except to take time out to answer an urgent plea from a reader

"Dear Doktor—I often make short business trips in my Twin Beech Not long ago I returned a whole day earlier than expected and, since my route took me directly over my home, I buzzed the house to rouse my wife. Unable to detect any signs of life, I ghded quietly some 400 ft , then suddenly gave it the gun just as I passed over the roof top Imagine my chagrin to see the milk man run out of the back door in wild confusion! I almost spun int Tell me, Doktor, what would you do if you were me? (Signed) Chagrined"

ANSWER. I would install a stall warning indicator as soon as possible (Signed) Von Flugen

* * *

HY SHERIDAN SAYS—That mobile SP correspondent, **Hy Sheridan**, between DC 6 hops is breaking in a new typewriter and it's a little nervous However, we can just make out the latest message to this column Translated, it says "There are two kinds of women—one who wants to correct a man's mistakes and the other who wants to be one" —R H W

FOR SAFETY

Flight Safety Foundation's president Jerry Lederer, on the right, presents our air safety awards to (left to right) J A. Odom, Jr , J. D Holland, and D B Clarke As we reported in the Nov 27 issue of AVIATION WEEK, Odom and Holland were on duty in the Memphis Airport control tower when an airline plane crashed on takeoff and their fast reaction to the emergency got rescue equipment to the scene of the crash immediately Clarke is the manager of the Gallup, N M , Airport and his fast work avoided loss of life when a transport on fire made an emergency landing at his field

WHAT'S NEW

New Books

A comprehensive and systematic survey of acromedical investigations in wartime Germany has finally become available Published in two volumes, "German Aviation Medicine, World War II" was prepared under the auspices of the Surgeon General of the USAF

Volume 1, after dealing briefly with the history of the development and organization of aviation medicine in Germany, discusses the interrelation between aerodynamics and aviation medicine This is followed by a three-part consideration of high altitude phenomena physical fundamentals, physiological fundamentals and oxygen equipment A complete section on acceleration effects completes the first volume

The second volume is slightly more varied Vibration, heat and cold problems, special sensing, training, emergency procedures, effects of air warfare on civilians and blast effects are the major headings

Reading the text reveals some intriguing items about problems in the field

For instance, it is stated that the combination of seating arrangement and landing skid springing in the Me-163 caused so many fractures of the spinal column that the aircraft was kept from operations for a long time

A word of warning these volumes are written for those thoroughly conversant with medicine in one form or another As guides to aircraft designers, the books are of questionable value but it would seem that any student or practitioner of aviation medicine could not do without them

The set of two is available from the Superintendent of Documents, U S Government Printing Office, Washington 25, D C The price for the set is $8.50, and the volumes are not available separately—D A A.

New Contest

A $1000 prize competition for technical papers having to do with research and development in the field of "non-fusion" welding processes is being sponsored by the Eutectic Welding Alloys Corp The competition closes May 31, 1951 Sought are papers on the subject of technological and research aspects, advances and advantages of the use of lower melting (lower than parent) filler metals in the non fusion welding processes There are three prizes $500, $300, and $200 For rules and further information write the firm at 40 Worth St , New York 13

ADVERTISERS INDEX
AVIATION WEEK
DEC 25, 1950

PROFESSIONAL SERVICES— First issue of each month

SEARCHLIGHT SECTION
(Classified Advertising)

EDITORIAL

Let's Watch This One

Kaiser Frazer in less than 10 days won top government approval for a major contract for building Fairchild Packet cargo transports. That is no mean accomplishment. Air Force Undersecretary McCone cleared the way for the Air Materiel Command to grant the award last week. No company in the aircraft industry has been able to duplicate this feat in recent history. One company won a trainer competition two years ago and still doesn't have a contract.

At this writing, it appears the story started with a loan of $25 million which Kaiser won from Reconstruction Finance Corp. Under the terms, Kaiser promises it will not raise its motor car prices without prior consent of RFC. It also promises to cut its car production. This harmonizes with the government's roll-back of prices, and conservation of civilian materials.

Obviously, if Kaiser is to pay back its government loan in a protracted emergency period, it must have government mobilization contracts. Since Kaiser's motor car plant at Willow Run was built in the last war to make big bombers, top federal officials feel that a Kaiser plane contract will offer a good prospect of sufficient government funds to repay the loan and make it possible for the Air Force to keep Willow Run from falling into the hands of one of the other two services.

Skipping the details of the conferences in the upper echelons of the government, the next move is a phone call from the office of Air Materiel Command's Gen. K. B. Wolfe (not from the general himself, significantly) to Fairchild's headquarters giving the company about an hour's notice to prepare for a visit from one of the general's aides, accompanying Mr. Henry Kaiser and Mr. Kaiser's son, to discuss K-F production of the Fairchild Packet. Other meetings followed rapidly. Then came word of the decision to give K-F an "assistance" contract.

Actually, Fairchild, the designer of the Packet, long ago had informed the Air Force that it could, by taking over the old Chicago Douglas bomber plant, meet the same production figures in the same time that K-F now came up with.

Mr. Kaiser's cost figures have not yet seen the light of day, but we shall await them with interest, and dare to forecast that they will be higher than Fairchild's estimates.

Mr. Kaiser's short-lived experience in partnership with Howard Hughes on the behemoth flying boat (Mr. Kaiser fled from aviation thereafter) is scant aviation production evidence in comparison with the years of experience piled up by Fairchild Engine & Airplane Corp. Fairchild is already producing about eight Packets a month and could have increased this rate to 20 a month in the near future. Mr. Kaiser's goal is 20 a month, with the first ship to be off the line late in 1951, but his lack of aircraft experience is against his meeting this target.

Fairchild's proposal to step up Packet production at Chicago is knocked out by the Kaiser program, Air Force officials said.

Obviously, the country should get the best planes in the quickest time at the lowest cost. But aircraft manufacturing is a specialized art, as Mr. Kaiser well knows. It appears sensible that Fairchild should have been permitted to go ahead full speed on its own plane, which it knows so well. It is an experienced manufacturer, with aircraft production know-how and management savvy.

A major company, babes in the aircraft woods, should have no prior right over those with experience and know-how, merely because it happens to have won a large government loan. The nation's own defense is at stake. Quality and speed of output are needed. Why win back the government's money on a loan if you fritter it away again on a high-cost defense manufacturer who may or may not make his schedules in an ever growing world crisis?

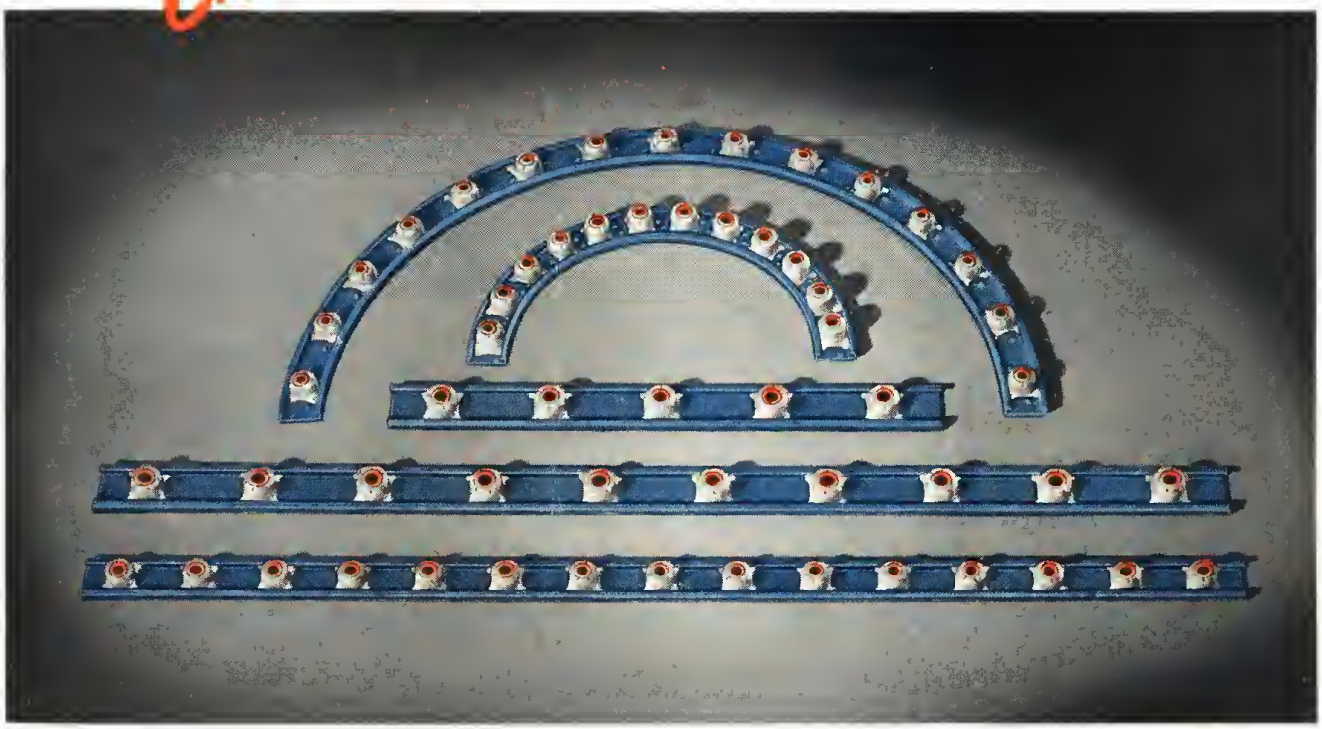
True, there may come a time when everyone in the industry—and some who are now outside it—will be pushed to the limit of their facilities to meet our national emergency schedules. But that time hasn't arrived yet. Ask any major aircraft company.

We wish the fabulous Kaiser all of the best, for the sake of the country. But this situation bears close watching.

—Robert H. Wood

NEW! Esna Gang Channel Strip

PROVIDES PERMANENT FASTENERS FOR APPLICATIONS SUBJECTED TO REPEATED "ON-OFF" USAGE



—*New High Strength 24S-T4 Aluminum Alloy Channel Strip—Colored Blue for Easy Identification!*

During production, mis-alignment of sub-assembly components can result in twisted channel strips—or nuts pushed out. This is particularly true in such applications as access covers and panels. Therefore, to promote additional production line economy and to further simplify time-saving multi-unit nut installations, ESNA developed their new 24S-T4 gang channel strips.

The extra tough aluminum alloy used for this new product provides additional strength for these unusual assemblies . . . and a new method of cut and raised dimpling retains the nuts securely, and prevents over-riding.

In addition, the new ESNA gang channel features a Nylon Locking Insert that assures *reuseability for over 100 applications.* This means tremendous savings in maintenance costs. Why? Because access covers, panels and similar components are regularly detached to permit inspection or repairs. Formerly, nut strips used on these assemblies had to be replaced, because of the high re-use factor. Now, however, the new ESNA Gang Channel Nuts, with the nylon red elastic locking collar, guarantee long range maintenance economy—the *self-locking torque is assured for the life of the aircraft.* And like all Elastic Stop Nuts, they protect fastenings against vibration . . . impact . . . and shock! The famous nylon red elastic collar keeps bolt and nut threads rust-free, seals against liquid seepage . . . and is RE-USEABLE . . . OVER ONE HUNDRED TIMES!

HERE'S A CHALLENGE: Send us complete details of your toughest bolted trouble spot whether it involves a gang channel nut application or another type of Elastic Stop Nut. We'll supply test nuts—FREE, in experimental quantities. Or for data sheets on the new ESNA Gang Channel—Write: Elastic Stop Nut Corporation of America, Union, N. J. Representatives and Agents are located in Milwaukee; New York City; Cleveland; Indianapolis; Boston; Detroit; Chicago; Pittsburgh; Houston; Bradenton, Florida; Beverly Hills, Calif.; Montreal, Canada.

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OVER 150 TYPES AND SIZES IMMEDIATELY AVAILABLE FROM STOCK